Version: 1.08

AUTOSTAR

EOBD / OBDII-CAN CODE READER

USER'S MANUAL

AutoStar EOBD / OBDII - CAN Code Reader Series

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1.0 - Introduction

1.1-The Product:

❒ AutoStar EOBD/OBDII-CAN CODE READER

On all generic EOBD / OBDII systems, when the vehicle computer (ECU) encounter problem communicating with its sensors, the computer will turn on the "CHECK ENGINE" light to warn the driver and sets Diagnostic Trouble Code (DTC) or Fault Code within its memory.

To retrieve the DTC, this Code Reader is used to communicate with the engine computer (ECU) through the 16 pin OBDII J1962 diagnostic link connector (DLC) normally situated under the dash board.

The Diagnostic Trouble Codes (DTC) or Fault codes are displayed on the LCD screen when read and also it will be stored within this Code Reader's memory. It is also used to Clear the DTCs after repair had been done to the vehicle.

This Code Reader is specially developed to work on all generic EOBD and OBDII compliant vehicles. The OBDII / EOBD vehicles are covered from year 1996 onwards up to the most recent models.

With its multi protocols capabilities, (supports C.A.N bus, J1850 VPW, J1850 PWM, ISO 9141 and KWP 2000 (ISO 14230-4) protocols) it does provide a very wide coverage of all EOBD / OBDII compliant vehicles of all makes.

Once you have the DTC information from the ECU, you can plug it into the PC via the USB port to read the DTC definitions and explanations. This is the first step in finding and fixing the vehicle problem.

Please take note of these important points:

- *Diagnostic Trouble Code (DTC) warns us of a problem or symptom has occurred with a particular engine system, not a specific part.*

- *The vehicle computer (ECU) can only report Diagnostic Trouble Code (DTC) based on what its sensors had relayed to it.*

- *There are some instances that sensors appeared to be bad when in actual fact, they are not.*

  The main causes were:

  - *Poor connections at the connector, broken wire or short circuit may prevent the sensor signal from reaching the ECU.*

  - *Failure of one system may affect the sensor in another system to give false results.*

- *It is always recommended that the use of the vehicle service manuals to assist in the diagnosing process is very important.*

  The next step in the diagnostic process is to test the systems and parts that are suspected to be defective.

  Once the faults had been identified and repaired, you can use this DTC reader to erase the codes from the ECU's memory. This will turn off the Malfunction Indicator Lamp (MIL) or Check Engine Light.

Product Features：

- *Works with all 1996 and newer cars & trucks that are OBDII/EOBD compliant.*
- *Reads and Clears generic and manufacture specific Fault Codes (DTC) and turns OFF 'Check Engine' light.*
- *Supports multiple DTC request: Generic codes, Pending codes and Manufacturer's specific codes.*
- *Saves last tested vehicle results in its memory and later review on Laptop or PC.*

- *Link to PC or Laptop through USB port.*
- *Easy to read crystal clear backlit 2-line LCD display.*
- *Highly reliable and accurate.*
- *Powered via OBDII connector cable – No internal batteries needed.*
- *Small in size and conveniently fits onto your palm.*

Specifications:

LCD Display:	*8 Character - Backlit display.*
Operating temperature:	*-20℃ ~ 50℃ (-4℉ ~ 122℉)*
Input Voltage:	*DC 9.0 ~ 15.0 V (through OBDII connector)*
Supported Protocols:	*J-1850 PWM (SAE)* *J-1850 VPW (SAE)* *ISO-9141* *KWP 2000 (ISO-14230)* *CAN bus (ISO-15765-4)* *EOBD*
Vehicle coverage:	*All American vehicles from year 1996 onward to the current models. All makes that are OBDII and EOBD compliant.*

1.2 - Safety Precautions

For safety reasons, read this manual thoroughly before operating the Tool.

Always refer to and follow the safety instructions and testing procedures provided by the car or equipment manufacturer. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise extreme care when using this test instrument.

Read All Instructions

Read, understand and follow all safety messages and instructions in this manual and on the test equipment. Safety messages in this section of the manual contain a signal word with a three-part message and, in some instances, an icon.

Safety Messages

Safety messages are provided to help prevent personal injury and equipment damage. All safety messages are introduced by a signal word. The signal word indicates the level of the hazard in a situation.

The types of safety messages are.

DANGER	**Indicates a possible hazardous situation which, if not avoided, will result in death or serious injury to operator or bystanders.**
WARNING	**Indicates a possible hazardous situation which, if not avoided, could result in death or serious injury to operator or bystanders.**
CAUTION	**Indicates a possible hazardous situation which, if not avoided, may result in moderate or minor injury to operator or bystanders.**
IMPORTANT	**Indicates a condition which, if not avoided, may result in damage to test equipment or vehicle**

Safety Precautions:

⚠DANGER

When the engine is running, it produces carbon monoxide, a toxic and poisonous gas. Always operate the vehicle in a well ventilated area. Do not breathe exhaust gases – they are hazardous that can lead to death.

⚠CAUTION

To protect your eyes from propellant object such as caustic liquids, always wear safety eye protection.

⚠DANGER

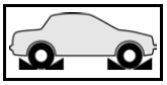
Fuel and battery vapors are highly flammable.
DO NOT SMOKE NEAR THE VEHICLE DURING TESTING.

⚠CAUTION

When engine is running, many parts (such as pulleys, coolant fan, belts, etc) turn at high speed. To avoid serious injury, always be alert and keep a safe distance from these parts.

⚠WARNING

Before starting the engine for testing or trouble shooting, always make sure the parking brakes is firmly engaged. Put the transmission in Park (automatic transmission) and Neutral (manual transmission).



⚠WARNING

Always block the drive wheels.
Never leave vehicle unattended while testing.

⚠CAUTION

Never lay tools on vehicle battery. You may short the terminals together causing harm to yourself, the tools or the battery.

⚠WARNING

Connecting or disconnecting the test equipment when the Ignition key is ON can cause damage to the vehicle electrical components. Always turn ignition OFF before connecting or disconnect the tool from the Diagnostic Link Connector.

⚠CAUTION

Engine parts become very hot when engine is running. To prevent severe burns, avoid contact with hot engine parts.

⚠WARNING

Do not wear loose clothing or jewelry while working on engine. Loose clothing can get caught in fan, pulleys, belts, etc. Jewelry can conduct current and can cause severe burns if comes in contact between power source and ground.

⚠CAUTION

When the engine is running, be cautious when working around the ignition coil, distributor cap, ignition wires and spark plugs. They are HIGH VOLTAGE components that can cause electrical Shock.

IMPORTANT

Always keep a fire extinguisher readily available and easily accessible in the workshop.

⚠CAUTION

Some vehicles are equipped with SRS (Airbags).Caution must be taken when working around the air bag components or wiring. Always refer to the vehicle service manuals on the CAUTION remarks. If the cautions are not followed, the air bag may open up unexpectedly resulting in personal injury.

Note that the air bag can still open up several minutes after the ignition key is off or even the vehicle battery is disconnected because of a special energy reserve module.

Always follow the vehicle manufacturer's warnings, cautions and service procedures.

1.3 - Vehicle Service Information

The following is a list of web sites and phone numbers where electronic engine control (EEC) diagnostic information is available.

✓ Some manuals may be available at your local dealer, auto parts stores or local public libraries.

Domestic Vehicles	Web Site	Phone Number
General Motors		
Chevrolet	www.chevrolet.com	1-800-551-4123
Pontiac	www.pontiac.com	1-800-551-4123
Oldsmobile	www.oldsmobile.com	1-800-551-4123
Buick	www.buick.com	1-800-551-4123
Cadillac	www.cadillac.com	1-800-333-4CAD
Saturn	www.saturn.com	1-800-553-6000
Ford		
Ford	www.ford.com	1-800-392-3673
Lincoln	www.lincoln.com	1-800-392-3673
Mercury	www.mercury.com	1-800-392-3673
Chrysler		
Chrysler	www.chrysler.com	1-800-348-4696
Dodge	www.dodge.com	1-800-348-4696
Plymouth	Not Available	1-800-348-4696
Eagle	Not Available	1-800-348-4696
European Vehicles		
Audi	www.audi.com	1-800-544-8021
Volkswagen	www.vw.com	1-800-544-8021
BMW	www.bmw.com	1-201-307-4000
MINI	www.mini.com	1-201-307-4000
Jaguar	www.jaguar.com	1-800-4-JAGUAR
Volvo	www.volvo.com	1-800-458-1552
Mercedes-Benz	www.mercedes-benz.com	1-800-367-6372
Land Rover	www.landrover.com	1-800-637-6837
Porsche	www.porsche.com	1-800-PORSCHE
Saab	www.saab.com	1-800-955-9007

Asian Vehicles

Acura	www.acura.com	1-800-999-1009
Honda	www.honda.com	1-800-999-1009
Lexus	www.lexus.com	1-800-255-3987
Scion	www.scion.com	1.866.70.SCION
Toyota	www.toyota.com	1-800-GO-TOYOTA
Hyundai	www.hyundai.com	1-800-633-5151
Infiniti	www.infiniti.com	1-800-662-6200
Nissan	www.nissanusa.com	1-800-nissan1
Kia	www.kia.com	1-800-333-4542
Mazda	www.mazda.com	1-800-222-5500
Daewoo	www.daewoo.com	1-822-759-2114
Subaru	www.subaru.com	1-800-SUBARU3
Isuzu	www.isuzu.com	1-800-255-6727
Geo	Not Available	Not Available
Mitsubishi	www.mitsubishi.com	1-888-MITSU2004
Suzuki	www.suzukiauto.com	1-800-934-0934

Other Manuals

Chilton Book Company	www.chiltonsonline.com	1-800-347-7707
Haynes Publications	www.haynes.com	1-800-242-4637
Bentley Publishers	www.bentleypublishers.com	1-800-423-4595

Repair Information Programs

Mitchell	www.mitchell1.com	1-888-724-6742
ALLDATA	www.alldata.com	1-800-697-2533

Suitable Manual Titles

Diagnostic Service Manuals
Power Train Codes and Oxygen Sensors
Automotive Emission Control Manual
Fuel Injection
Automotive Electrical Manual
Automotive Electrics and Electronics
Automotive Sensors
Electronic Transmission Control
Emission Control Technology
Engine Management or other similar titles...

1.4 - Introduction to On-Board Diagnostics (OBD) II

On-board diagnostics version II (OBD II) is a system that the Society of Automotive Engineers (SAE) developed to standardize automotive electronic diagnosis.

Beginning in 1996, most new vehicles sold in the United States were fully OBD II compliant and in year 2001, Europe started its own EOBD system.

✓ Technicians can now use the same tool to test any OBD II / EOBD compliant vehicles without special adapters. SAE established guidelines that provide:

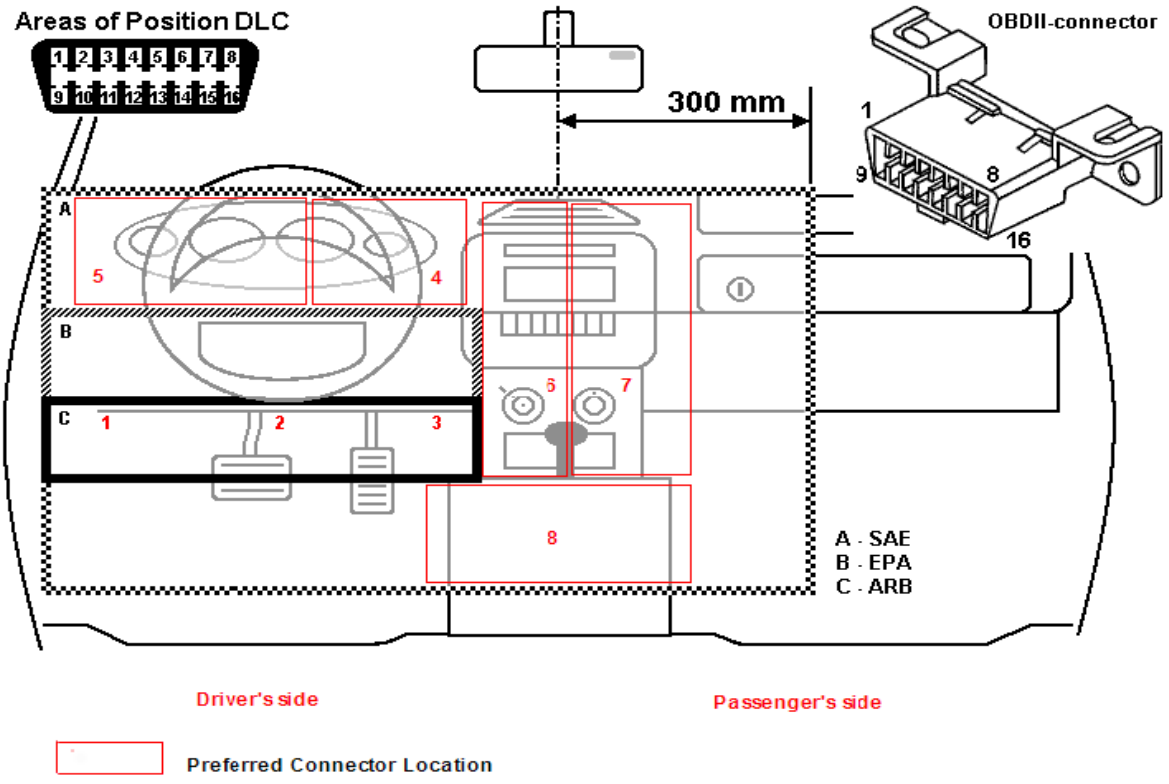
- ❒ A universal connector, called the Diagnostic Link Connector (DLC) with dedicated pin assignments.
- ❒ A standard location for the DLC, visible under the dash on driver's side.
- ❒ A standard list of diagnostic trouble codes (DTCs) used by all manufacturers.
- ❒ A standard list of parameter identification (PID) data used by all manufacturers.
- ❒ Ability for vehicle systems to record operating conditions when a fault occurs.
- ❒ Expanded diagnostic capabilities that records a code whenever a condition occurs that affects vehicle emissions.
- ❒ Ability to clear stored codes from the vehicle's memory with a Scan Tool.

SAE Publications

SAE has published hundreds of pages of text defining a standard communication protocol that establishes hardware, software, and circuit parameters of OBD II systems.

- SAE publishes recommendations, not laws, but the Environmental Protection Agency (EPA) and California Air Resources Board (CARB) made many of SAE's recommendations legal requirements.

1.4.1 - Diagnostic Link Connector (DLC) Locations



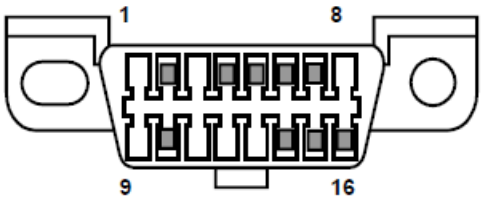
Explanation of Diagram Numbered Locations

Location #	*Description*
1	Driver's side, underneath dasboard, in the area under the steering column, +/- 150 mm (i.e., +/- 6 inches on either side of the steering column)
2	Driver's side, underneath dasboard,between the driver-side door and steering column area
3	Driver's side, underneath dasboard, between the steering column area and the center console (also includes connectors on the driver side but connected to the center console)
4	Driver's side, dashboard instrument/gauge area, between the steering column and center console
5	Driver's side, dashboard instrument/gauge area, between the driver-side door and steering column
6	Center console, vertical surface (i.e.,near radio and climate controls), left of vehicle centerline
6/7	Center console, vertical surface (i.e.,near radio and climate controls), on vehicle centerline
7	Center console, vertical surface right of vehicle centerline or on passenger side of center console
8	Center console, horizontal surface (i.e, armrest, handbrake area), in front passenger area
9	Any location other than locations # 1-8 (i.e., rear passenger area, passenger side glove box, topof dashboard near windshield)

*__Note:__
- Locations #1-3 represent preferable locations, Locations #4-8 represent allowable locations under SAE J1962
- Connectors in location # 6, #6/7, and #7 may be covered by ashtrays, covers, cup holders, coin holders, etc.

1.4.2 - Data Link Connector (DLC) Pins

Data Link Connector (DLC) Pins



1 - Manufacturer Reserved
2 - J1850 Bus+
3 - Manufacturer Reserved
4 - Chassis Ground
5 - Signal Ground
6 - CAN High, J-2284
7 - K Line, ISO 9141-2 & ISO/DIS 14230-4
8 - Manufacturer Reserved
9 - Manufacturer Reserved
10 - J1850 Bus-
11 - Manufacturer Reserved
12 - Manufacturer Reserved
13 - Manufacturer Reserved
14 - CAN Low, J-2284
15 - L Line, ISO 9141-2 & ISO/DIS 14230-4
16 - Battery Power

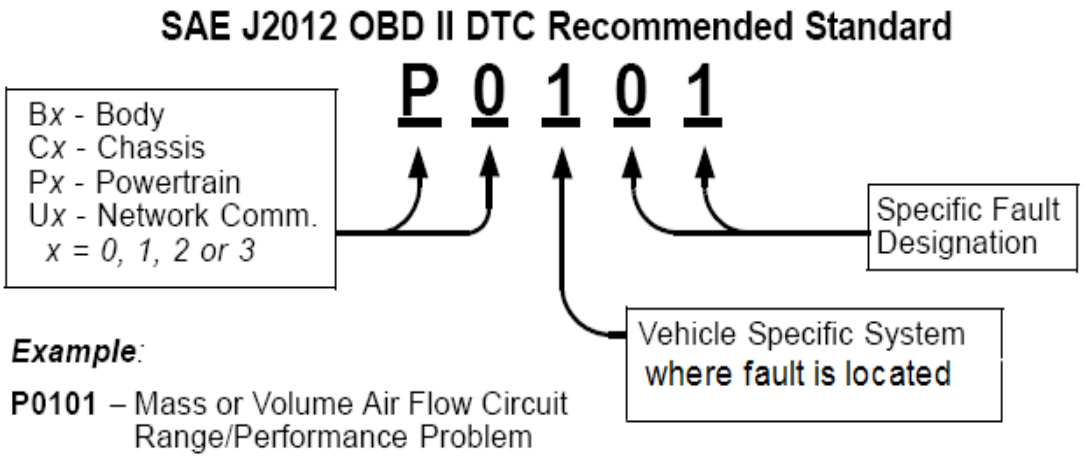
1.4.3 - OBD Diagnostic Trouble Codes(DTCs)

Diagnostic Trouble Codes are how OBDII / EOBD identifies and communicates to you with the on board computer. When the computer recognizes and identifies a problem, a DTC for the fault is stored in its memory. These codes are intended to help the user to determine the root cause of the problem.

These **OBDII / EOBD DTC** codes are made up of:

- The **1**st character in the DTC indicates a letter which identifies the "main system" where the fault occurred (Powertrain, Body, Chassis or Network)
- The **2**nd character is a numerical digit which identifies "Generic or Manufacturer Specific"
- The **3**rd character is also a numerical digit which identifies the specific systems or sub-systems where the problem is located.
- The **4**th and **5**th characters are also numerical digits which identifies the section of the system that is malfunctioning.

1.4.3 - OBD Diagnostic Trouble Codes(DTCs)


SAE J2012 OBD II DTC Recommended Standard
P 0 1 0 1
Bx - Body
Cx - Chassis
Px - Powertrain
Ux - Network Comm.
x = 0, 1, 2 or 3
Specific Fault Designation
Vehicle Specific System where fault is located

Example:

P0101 – Mass or Volume Air Flow Circuit Range/Performance Problem

Powertrain Codes
P0xxx - *Generic (SAE)*
P1xxx - *Manufacturer Specific*
P2xxx - *Generic (SAE)*
P30xx-P33xx - *Manufacturer Specific*
P34xx-P39xx - *Generic (SAE)*

Chassis Codes
C0xxx - *Generic (SAE)*
C1xxx - *Manufacturer Specific*
C2xxx - *Manufacturer Specific*
C3xxx - *Generic (SAE)*

Body Codes
B0xxx - *Generic (SAE)*
B1xxx - *Manufacturer Specific*
B2xxx - *Manufacturer Specific*
B3xxx - *Generic (SAE)*

Network Communication Codes
U0xxx - *Generic (SAE)*
U1xxx - *Manufacturer Specific*
U2xxx - *Manufacturer Specific*
U3xxx - *Generic (SAE)*

Vehicle Specific System where fault is located

1. *Fuel and Air Metering*
2. *Fuel and Metering (injector circuit malfunction only)*
3. *Ignition System or Misfire*
4. *Auxillary Emission Control System*
5. *Vehicle Speed Control and Idle Control System*
6 *Computer Output Circuits*
7. *Transmission*
8. *Transmission.*

1.4.3 – OBDII Specific Systems DTCs Listing:

Lower	Upper	Assigned DTC System
P0000	P00FF	Fuel Air Metering Auxiliary Emission Controls
P0100	P02FF	Fuel Air Metering
P0300	P03FF	Ignition System or Misfire
P0400	P04FF	Auxiliary Emission Controls
P0500	P05FF	Vehicle Speed Idle Control Auxiliary Inputs
P0600	P06FF	Computer and Auxiliary Outputs
P0700	P09FF	Transmission
P0A00	P0AFF	Hybrid Propulsion
P1000	P10FF	Manufacturer Control Fuel & Air Metering, Auxiliary Emission Controls
P1100	P12FF	Manufacturer Control Fuel & Air Metering
P1300	P13FF	Manufacturer Control Ignition System or Misfire
P1400	P14FF	Manufacturer Control Auxiliary emission Controls
P1500	P15FF	Manufacturer Cntrl Veh.Spd. Idle Speed Control Auxiliary Inputs

Lower	Upper	Assigned DTC System
P1600	P16FF	Manufacturer Control Auxiliary Inputs Auxiliary Outputs
P1700	P19FF	Manufacturer Control Transmission
P2000	P22FF	Fuel Air Metering Auxiliary emission Controls
P2300	P23FF	Ignition System or Misfire
P2400	P24FF	Auxiliary Emission Controls
P2500	P25FF	Auxiliary Inputs
P2600	P26FF	Computer and Auxiliary Outputs
P2700	P27FF	Transmission
P2900	P32FF	Fuel Air Metering Auxiliary Emission Controls
P3300	P33FF	Ignition System
P3400	P34FF	Cylinder Deactivation
U0000	U00FF	Network Electrical
U0100	U02FF	Network Communication
U0300	U03FF	Network Software
U0400	U04FF	Network Data

✓ J2012 and ISO 15031-6 are standards for all DTCs, established by the SAE, International Organization for Standardization (ISO) and other governing bodies.

- ❒ Codes and definitions assigned by these specifications are known as Generic OBD II codes.
- ❒ OBD II requires compliance to these standards for all cars, light trucks, APVs, MPVs, and SUVs sold in the United States.
- ❒ Codes not reserved by the SAE are reserved for the manufacturer and referred to as Manufacturer Specific Codes.

2.0 - The Code Reader

2.1 - Main unit

Diagnostic Cable
Connects the Code Reader to the vehicle's DLC during testing.

Connector
Connects to the diagnostic cable.

Display
Instructions and DTC or Fault Codes are displayed here.

Keypad
Command keys to access to various functions.

USB Port
This connects up to the PC via a USB cable to view the DTCs together with its definitions.

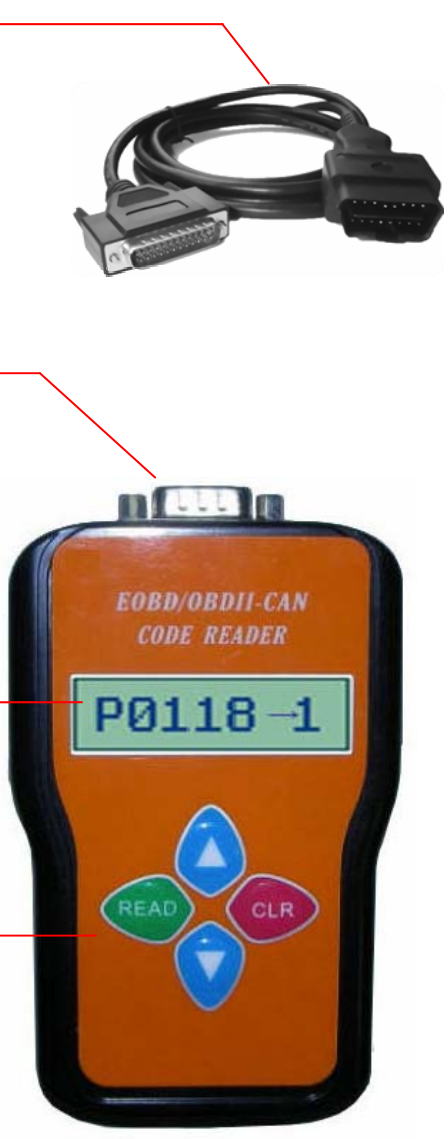


Figure 1

2.2 - Keypad Functions:

Figure 2

2.2.1 - Functions of Individual Key:

1.

Press this key to confirm selection and enter 'READ' program.

2.
Page or scroll 'Down' key to the previous code if available.

3.

To erase the DTC from the ECU memory, press this key to enter the erasure mode.

4.
Page or scroll 'UP' key to the next code if available.

2.3 - Getting Started:

Before you use the Code Reader on the vehicle, please ensure that mechanical problems such as low oil level, damaged hoses, wiring or electrical connections are fixed FIRST. They may cause a fault code to set.

The following Areas need to be checked before starting any test:

- The levels of engine oil, power steering fluid, transmission fluid (if auto transmission), engine coolant and other fluids must be at proper level. Top up if necessary.
- Check the condition of air hoses and the air filter must be cleaned. Replace if necessary.
- Make sure the timing belts are in good conditions and properly tensioned.
- Make sure the spark plugs are cleaned and in good condition. Check for loose, damaged, disconnected or missing plug cables.
- Make sure that all mechanical linkages to the engine sensors (throttle, gearshift position, transmission, etc) are secure and properly connected. Refer to Service Manuals for locations.
- Check all electrical wirings and harnesses for proper connections and condition of its insulation.
- Check all rubber hoses (radiator) and steel hoses (vacuum and fuel) for leaks, cracks, blockage or other damages.
- Make sure the engine is mechanically sound. Do a compression check, engine vacuum check, timing check, etc.
- Always refer to the manufacturer's Service Manual if you are not sure of the repair procedures.

3.0 - Vehicle Diagnosis

3.1 - START SCANNING

When everything had been checked and confirmed as mentioned above, the testing operation can be carried out.

1. Switch the Ignition key to OFF position (Figure 3).

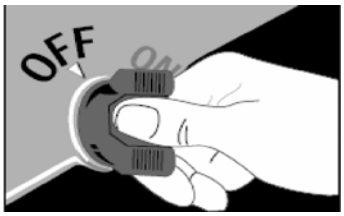


Figure 3

2. Locate the Diagnostic Link Connector (usually under the dash board or refer to DLC location - page 12) and plug in the Code Reader's OBDII male connector. It will show "PRESS READ" on the LCD display when power is ON.

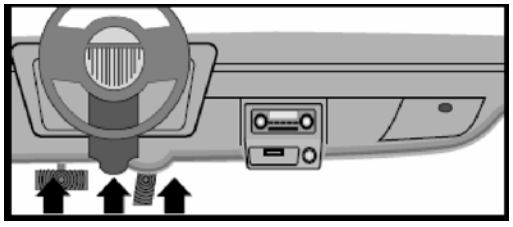


Figure 4

3. Turn the Ignition Key to ON position. Do not crank or start the engine. (Figure 5)

Figure 5

3.1.1- READ DTCs

✓ Selecting this function allows the Code Reader to read the DTCs from the vehicle's control modules. DTCs are used to help determine the cause of a problem or problems within a vehicle. These codes cause the control module to illuminate the malfunction indicator lamp (MIL) when emission-related or drivability fault occurs. MIL is also known as service engine soon or check engine lamp.

✓ ***READ DTCs*** can be done with the **K**ey **O**n **E**ngine **O**ff (KOEO) or with the **K**ey **O**n **E**ngine **R**unning (KOER).

1. Press the

key, the Code Reader starts to communicate with the ECU.

1. The LCD display will prompt you to WAIT while establishing contact (Fig 6).

Figure 6

2. About 1 second, the contact is established. The Code Reader starts to scan the ECU's memory for DTCs and the display will show as follows: (Fig.7)

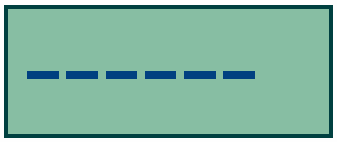


Figure 7

4. If there is no DTC or Fault Code present in the ECU memory, the display will show: (Fig. 8)

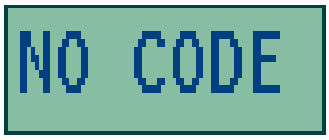


Figure 8

5. If there is only one DTC present, the display will show as an example below:

Figure 9

6. If there are more than one DTC present, the display will show as an example below. The number 1 indicates the first DTC. (Fig. 10)

Figure 10

7. To proceed to display the next DTC, press key. Repeat this procedure again and again until the last DTC display.

For Example:

If the last DTC was "P1233→5" and by pressing the button again will return to the first DTC number "P0118→1". This meant that it had five DTCs (notice that the arrow indicated 5).

8. To return back to the previous DTC, press key.

9. If there is a need to read the DTC again, press

key and it will display as shown in Fig. 11 below.

Figure 11

10. Press

key again, the LCD display will show "WAIT" (Fig 12) and the reading process will proceed itself until the final results are displayed.

Figure 12

3.1.2 - ERASE DTCs

The Erase function deletes the DTCs, Freeze Frame Data, etc from the vehicle's computer (ECU) memory. *Perform this function only after the engine system have been repaired and checked completely.*

If the DTCs return after reading DTC on the second time, this indicates that the problems have not been rectified or there are other faults still present.

1. To clear the DTC, press the

button, the Code Reader starts to communicate with the ECU.

2. After awhile, the LCD display will prompt you "CLEAR?" (Fig. 13)

Figure 13

3. Press

button again will start to clear the DTC from ECU's memory.

4. While the Code Reader is in the process of clearing the DTC, the LCD will display as follows: (Fig.14)

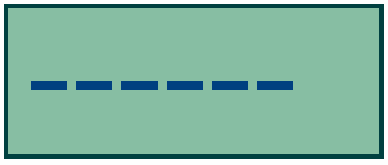


Figure 14

5. When the DTC has been cleared, the LCD will display "CLR OK" and this completes the "CLEAR" operation. (Fig. 15)

Figure 15

10. NO LINK

Figure 16

This above display (Fig. 16) will show if the Code Reader is unable to communicate with the ECU after it had tried using the five protocols (J1850 VPW, J1850 PWM, ISO 9141, KWP2000 and CAN bus).

The problems could be as follows:

- The tested vehicle is not EOBD / OBDII compliant.

Note:
To check whether the vehicle being tested is OBDII compliant, always refer to the Vehicle Emission Control Information (VECI) decal located under the hood or by the radiator of most vehicles. See (Fig.17) below.

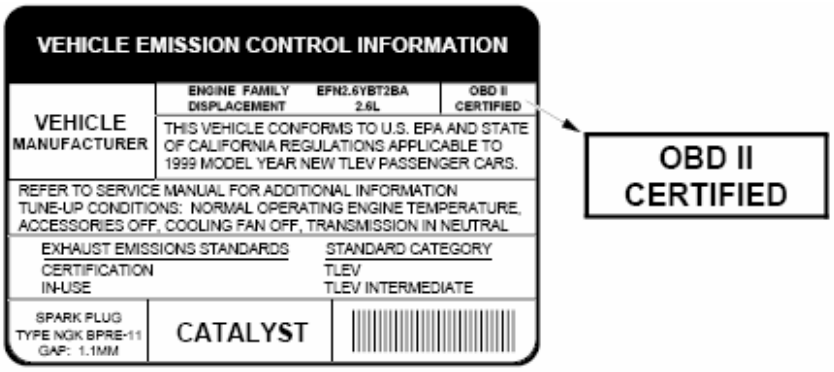

VEHICLE EMISSION CONTROL INFORMATION
ENGINE FAMILY EFN2.6YBT2BA
DISPLACEMENT 2.6L
OBD II CERTIFIED
VEHICLE MANUFACTURER
THIS VEHICLE CONFORMS TO U.S. EPA AND STATE OF CALIFORNIA REGULATIONS APPLICABLE TO 1999 MODEL YEAR NEW TLEV PASSENGER CARS.
REFER TO SERVICE MANUAL FOR ADDITIONAL INFORMATION
TUNE-UP CONDITIONS: NORMAL OPERATING ENGINE TEMPERATURE, ACCESSORIES OFF, COOLING FAN OFF, TRANSMISSION IN NEUTRAL
EXHAUST EMISSIONS STANDARDS
CERTIFICATION
IN-USE
STANDARD CATEGORY
TLEV
TLEV INTERMEDIATE
SPARK PLUG
TYPE NGK BPRE-11
GAP: 1.1MM
CATALYST
OBD II CERTIFIED

Figure 17

- There may be bad contacts on the vehicle's Diagnostic Link Connector.
- Clean the contacts and plug back the Code Reader connector and try again.

4.0 – Software / Driver Installation

4.1 – Driver Installation

In order to work with the PC / Laptop, first install the operating software from the CD provided.

1. Using the USB cable provided, plug it to the Code Reader and the other end to PC USB port. The wizard program will show as follows: (Fig.18)

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 18

2. Click 'NEXT' will proceed to the display as shown (Fig.19).

Figure 19

3. Once the CR-101 USB driver was found, it begin to install (Fig.20)

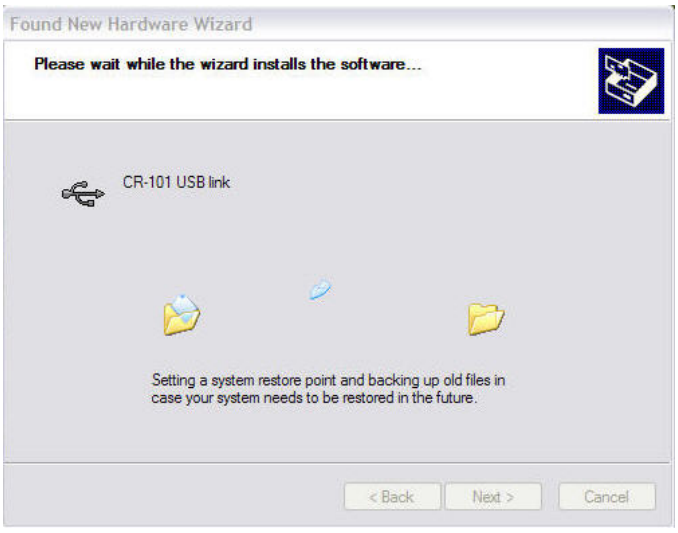

Found New Hardware Wizard
Please wait while the wizard installs the software...
CR-101 USB link
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

Figure 20

4. When the installation has completed, the display shows as follows (Fig.21)

Figure 21

5. Click the 'Finish' tab completes the installation. Then, go back to Desktop on "My Computer" icon; right click on the mouse. From the pop up menu, select "Properties" and left click to enter and display will show (Fig.22)

Figure 22

6. Select 'Hardware' tab and it will display as follows: (Fig.23)

System Properties
System Restore
Automatic Updates
Remote
General
Computer Name
Hardware
Advanced
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Device Manager
Drivers
Driving Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers.
Driver Signing
Windows Update
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK
Cancel
Apply

Figure 23

7. Left click on the 'Device Manager' and it will change to the display as shown and the Code Reader LCD will also display "PC MODE".

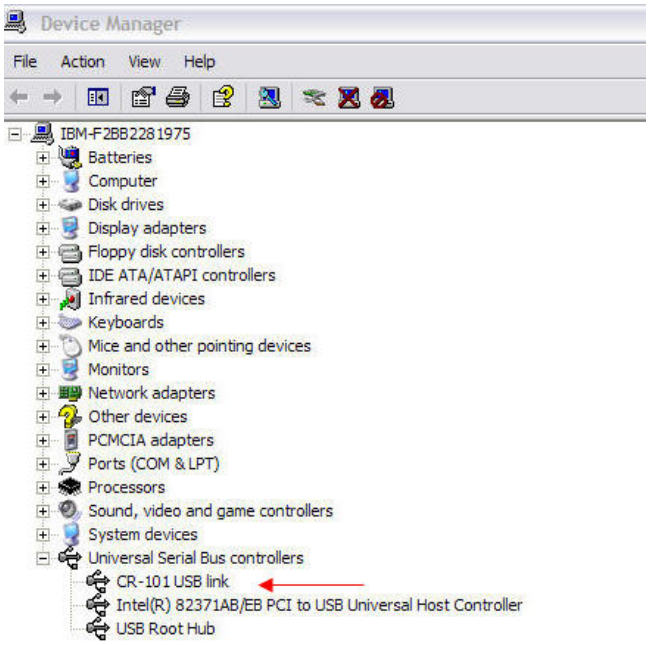


Figure 24

- 28 -

Note: If the PC had detected the code reader, it will display CR-101 USB link under Universal Serial Bus controllers. (See Fig.24)

5.0 – PC Screen Display

5.1 – Display Functions

Open the 'CODE Definitions' program by clicking on the 'CR-101' short cut icon and the display will show as follows (Fig. 25):

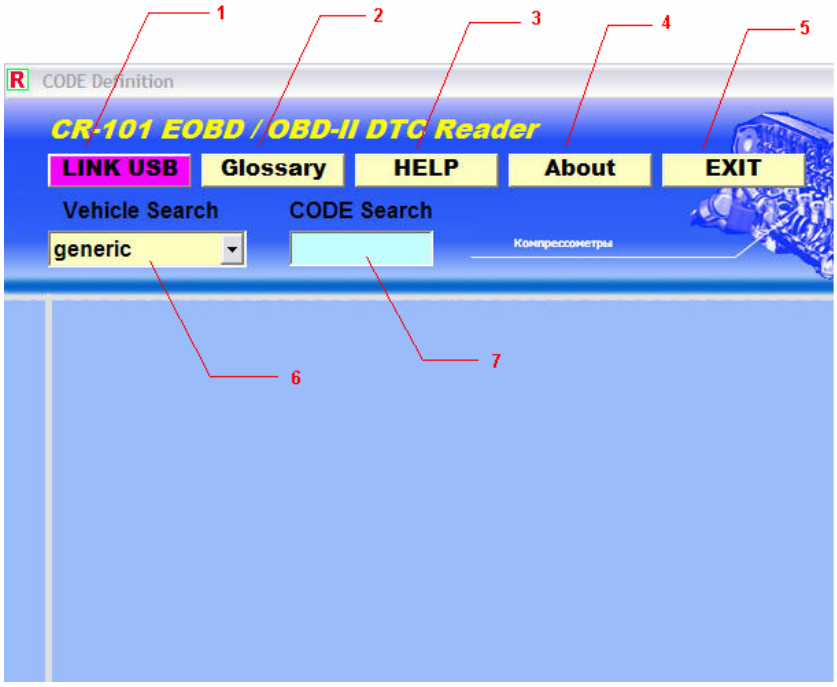


Figure 25

Functions of each field:

1. When this LINK USB TAB is clicked, it starts to link up with the PC.
2. Click this Glossary TAB if you need to check the abbreviations term.
3. Click HELP TAB if need to get information on the procedures.
4. Click About TAB to know about the software version.
5. Click EXIT TAB to exit the program.
6. Under the 'Vehicle Search', click ▼ tab will pop up a menu on 'generic' (OBDII) and a list of car manufacturers (manufacturer's specific) for selection of choice (See Fig. 28).
7. Under 'CODE Search' field, entering of fault code number will display its definition basing on the selected car in Vehicle Search [6] (See Fig. 32).

5.2 – View DTC Definitions

1. After the vehicle had been tested with the Code Reader, the result (fault codes) will be stored in its memory.

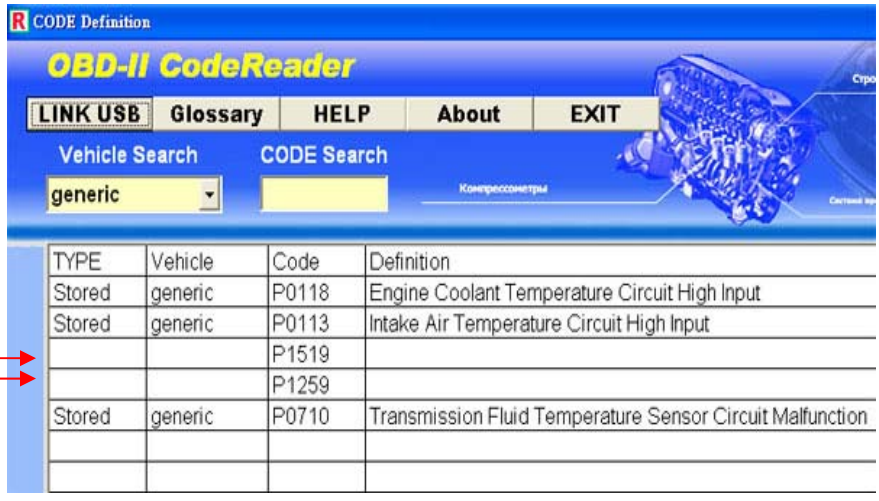
   Connect the Code Reader to the PC with the USB cable. Once connected, the Code Reader will display 'PC Mode' on its LCD screen (Fig.26) and now it is ready to link up to the PC.

Figure 26

Open up the 'CR-101' program from the PC and then under **Vehicle Search** category, click ▼ tab. From the menu (Fig. 28), select the manufacturer that the vehicle you had tested earlier or use 'generic' (OBDII DTCs only).

Click "**LINK USB**" TAB and after the communication has established, the display will show the fault codes and definition list as shown in example below (Fig. 27).

No definitions



TYPE	Vehicle	Code	Definition
Stored	generic	P0118	Engine Coolant Temperature Circuit High Input
Stored	generic	P0113	Intake Air Temperature Circuit High Input
		P1519	
		P1259	
Stored	generic	P0710	Transmission Fluid Temperature Sensor Circuit Malfunction

Figure 27

2. From the display (Fig. 27), you will notice that even though there are fault codes, not all had definitions. For instance: P1519 and P1259.

   This is because these are manufacturer's specific codes (P1) and not under generic OBDII (P0) ones. *(Note: 'generic' was selected earlier under Vehicle Search)*

   To display these definitions, go to Vehicle Search (Fig. 28), click ▼ tab and select the vehicle manufacturer which was tested earlier.

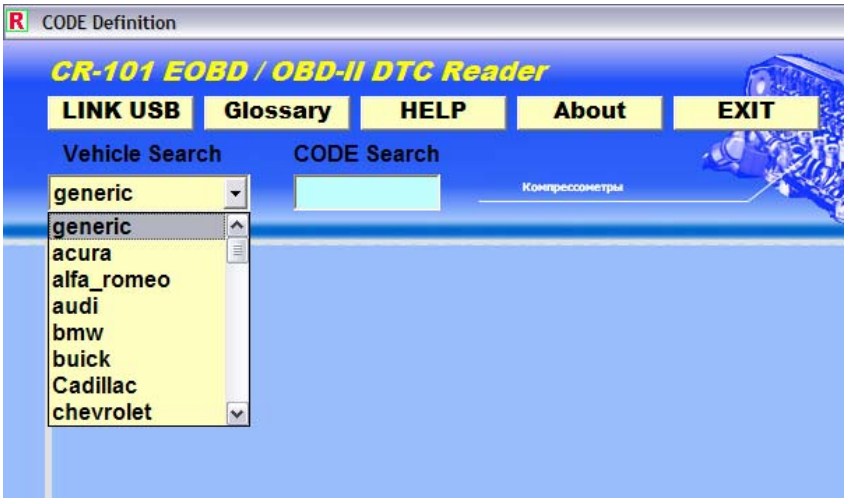
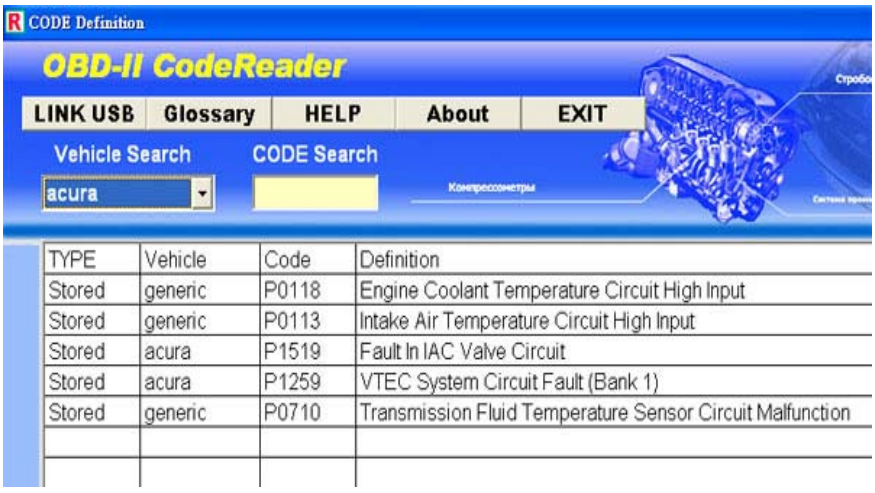


Figure 28

For example: The tested car was **Acura** (Fig. 29) and selected it.

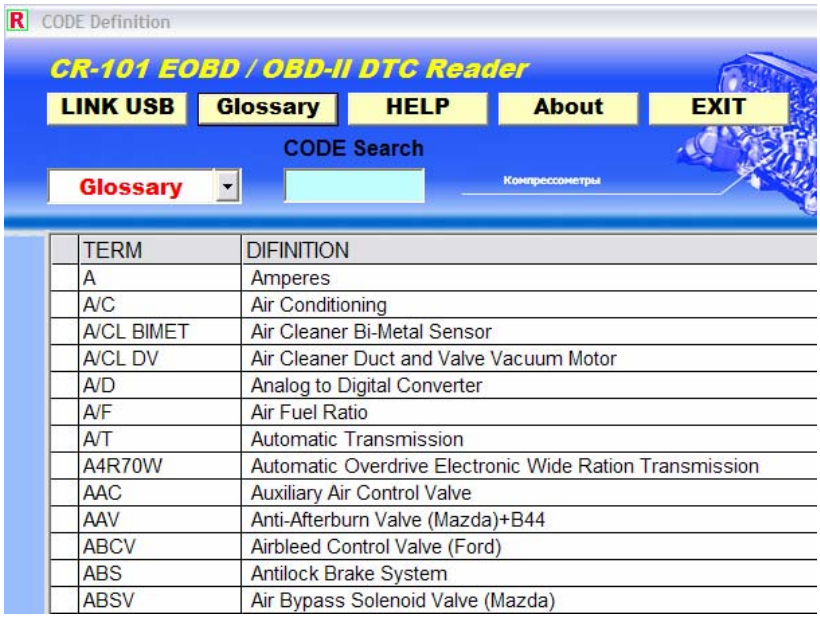


TYPE	Vehicle	Code	Definition
Stored	generic	P0118	Engine Coolant Temperature Circuit High Input
Stored	generic	P0113	Intake Air Temperature Circuit High Input
Stored	acura	P1519	Fault In IAC Valve Circuit
Stored	acura	P1259	VTEC System Circuit Fault (Bank 1)
Stored	generic	P0710	Transmission Fluid Temperature Sensor Circuit Malfunction

Figure 29

5.3 – Glossary Functions

If there is a need to check the words abbreviations, click "GLOSSARY" tab and the list of terms and definitions will display from A to Z. (Fig.30)



TERM	DIFINITION
A	Amperes
A/C	Air Conditioning
A/CL BIMET	Air Cleaner Bi-Metal Sensor
A/CL DV	Air Cleaner Duct and Valve Vacuum Motor
A/D	Analog to Digital Converter
A/F	Air Fuel Ratio
A/T	Automatic Transmission
A4R70W	Automatic Overdrive Electronic Wide Ration Transmission
AAC	Auxiliary Air Control Valve
AAV	Anti-Afterburn Valve (Mazda)+B44
ABCV	Airbleed Control Valve (Ford)
ABS	Antilock Brake System
ABSV	Air Bypass Solenoid Valve (Mazda)

Figure 30

For quick search, entering a character or abbreviations in the **CODE Search** area will display definitions in two fields as example: **e** (Figure 31) below.

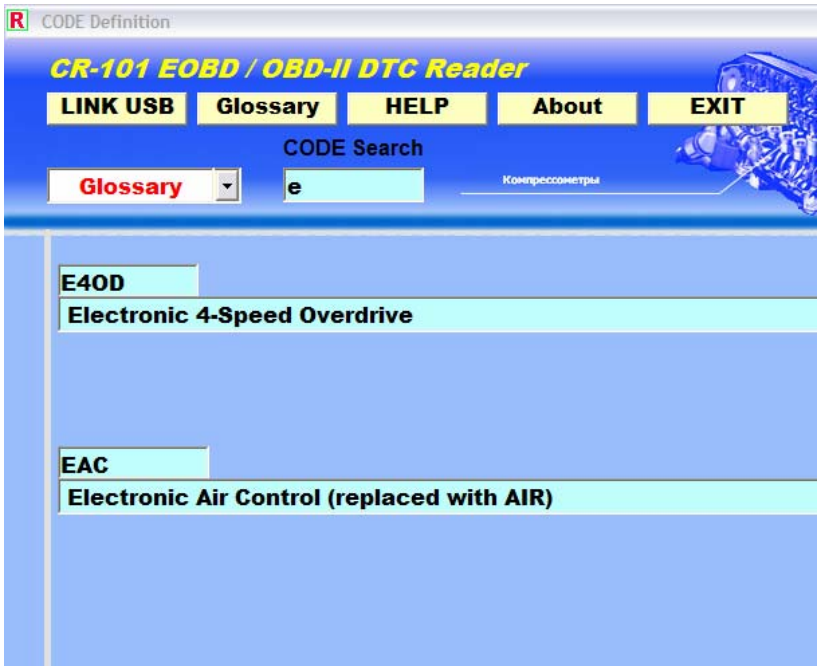


Figure 31

5.4 – CODE Search

This function is to search for code definitions by selecting the manufacturer in Vehicle Search field and keying the DTC code number in CODE Search field (Fig.32).

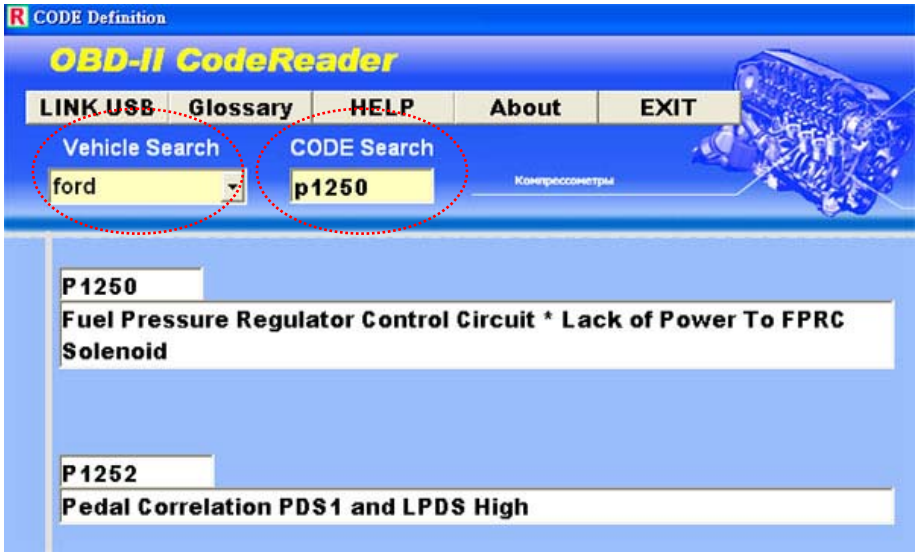


Figure 32

If there is no such code found under Ford - DTCs list file then the screen display will show as example below: P1251 (Fig. 33).

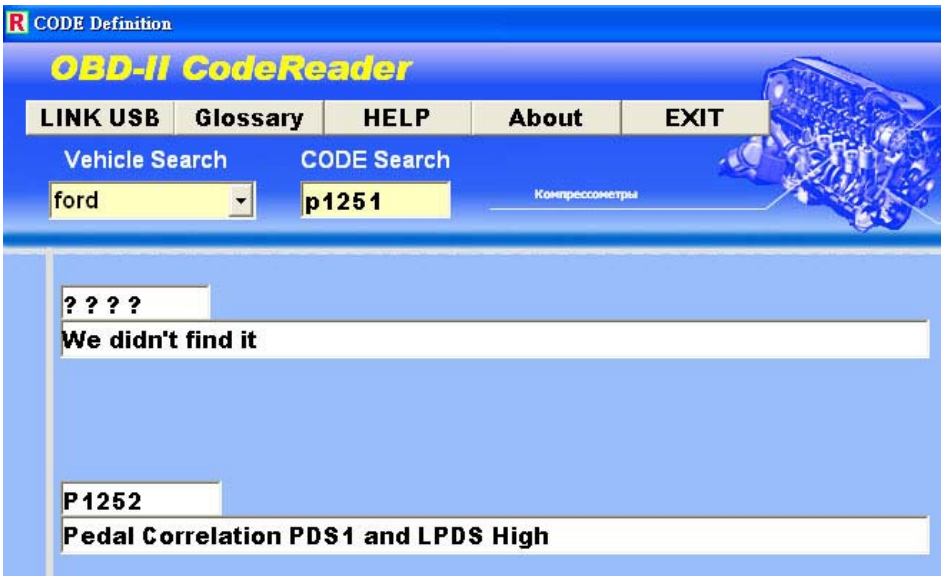


Figure 33

6.0 – OBDII / EOBD DTC Reference Guide (part)

6.1 - Generic OBDII DTCs Definitions List (part)

Generic OBD II Fault Codes Reference Guide

The Diagnostic Trouble Code numbering follows a standardized structure. All Diagnostic Trouble Codes have a letter followed by a 4-digit number (e.g. P1234). The first letter indicates the type of code:

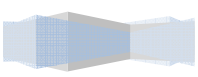
P = Powertrain (Generic: P0, P0A, P2, P2A, P34 – P39)
B = Body (Generic: B0, B3)
C = Chassis (Generic: C0, C3)
U = Network Communication (Generic: U0, U3)

OBDII Generic
Powertrain Trouble Codes (P0, P0A, P2, P2A, P34 – P39)

P00XX Fuel and Air Metering and Auxiliary Emission Controls

P0001 Fuel Volume Regulator Control Circuit/Open
P0002 Fuel volume Regulator Control -Circuit Range/Performance
P0003 Fuel Volume Regulator Control -Circuit Low
P0004 Fuel Volume Regulator Control -Circuit High
P0005 Fuel Shut-off Valve -Circuit Open
P0006 Fuel Shut-off Valve -Circuit Low
P0007 Fuel Shut-off Valve -Circuit High
P0008 Engine Position System Performance Bank 1
P0009 Engine Position System Performance Bank 2
P0010 "A" Camshaft Position Actuator Circuit (Bank 1)
P0011 "A" Camshaft Position - Timing Over-Advanced or System Performance (Bank 1)
P0012 "A" Camshaft Position - Timing Over-Retarded (Bank 1)
P0013 "B" Camshaft Position - Actuator Circuit (Bank 1)
P0014 "B" Camshaft Position - Timing Over-Advanced or System Performance (Bank 1)
P0015 B Camshaft Position - Timing Over-Retarded (Bank 1)
P0016 Crankshaft Position Camshaft Position Correlation (Bank 1 Sensor A)
P0017 Crankshaft Position Camshaft Position Correlation (Bank 1 Sensor B)
P0018 Crankshaft Position Camshaft Position Correlation (Bank 2 Sensor A)
P0019 Crankshaft Position Camshaft Position Correlation (Bank 2 Sensor B)
P0020 A Camshaft Position Actuator Circuit (Bank 2)
P0021 A Camshaft Position - Timing Over-Advanced or System Performance (Bank 2)
P0022 A Camshaft Position - Timing Over-Retarded (Bank 2)
P0023 B Camshaft Position - Actuator Circuit (Bank 2)
P0024 B Camshaft Position - Timing Over-Advanced or System Performance (Bank 2)
P0025 B Camshaft Position - Timing Over-Retarded (Bank 2)
P0026 Intake Valve Control Solenoid Circuit Range/ Performance (Bank 1)
P0027 Exhaust Valve Control Solenoid Circuit Range/ Performance (Bank 1)

P0028 Intake Valve Control Solenoid Circuit Range /Performance (Bank 2)
P0029 Exhaust Valve Control Solenoid Circuit Range /Performance (Bank 2)
P0030 HO2S Heater Control Circuit (Bank 1 Sensor 1)
P0031 HO2S Heater Control Circuit Low (Bank 1 Sensor 1)
P0032 HO2S Heater Control Circuit High (Bank 1 Sensor 1)
P0033 Turbo Charger Bypass Valve Control Circuit
P0034 Turbo Charger Bypass Valve Control Circuit Low
P0035 Turbo Charger Bypass Valve Control Circuit High
P0036 HO2S Heater Control Circuit (Bank 1 Sensor 2)
P0037 HO2S Heater Control Circuit Low (Bank 1 Sensor 2)
P0038 HO2S Heater Control Circuit High (Bank 1 Sensor 2)
P0039 Turbo/Super Charger Bypass Valve Control Circuit Range/Performance
P0040 O2 Sensor Signals Swapped Bank 1 Sensor 1/ Bank 2 Sensor 1
P0041 O2 Sensor Signals Swapped Bank 1 Sensor 2/ Bank 2 Sensor 2
P0042 HO2S Heater Control Circuit (Bank 1 Sensor 3)
P0043 HO2S Heater Control Circuit Low (Bank 1 Sensor 3)
P0044 HO2S Heater Control Circuit High (Bank 1 Sensor 3)
P0045 Turbo/Super Charger Boost Control Solenoid Circuit/Open
P0046 Turbo/Super Charger Boost Control Solenoid Circuit Range/Performance
P0047 Turbo/Super Charger Boost Control Solenoid Circuit Low
P0048 Turbo/Super Charger Boost Control Solenoid Circuit High
P0049 Turbo/Super Charger Turbine Over speed
P0050 HO2S Heater Control Circuit (Bank 2 Sensor 1)
P0051 HO2S Heater Control Circuit Low (Bank 2 Sensor 1)
P0052 HO2S Heater Control Circuit High (Bank 2 Sensor 1)
P0053 HO2S Heater Resistance (Bank 1 Sensor 1)
P0054 HO2S Heater Resistance (Bank 1 Sensor 2)
P0055 HO2S Heater Resistance (Bank 1 Sensor 3)
P0056 HO2S Heater Control Circuit (Bank 2 Sensor 2)
P0057 HO2S Heater Control Circuit Low (Bank 2 Sensor 2)
P0058 HO2S Heater Control Circuit High (Bank 2 Sensor 2)
P0059 HO2S Heater Resistance (Bank 2 Sensor 1)
P0060 HO2S Heater Resistance (Bank 2 Sensor 2)
P0061 HO2S Heater Resistance (Bank 2 Sensor 3)
P0062 HO2S Heater Control Circuit (Bank 2 Sensor 3)
P0063 HO2S Heater Control Circuit Low (Bank 2 Sensor 3)
P0064 HO2S Heater Control Circuit High (Bank 2 Sensor 3)
P0065 Air Assisted Injector Control Range/Performance
P0066 Air Assisted Injector Control Circuit or Circuit Low
P0067 Air Assisted Injector Control Circuit High
P0068 MAP/MAF Throttle Position Correlation
P0069 Manifold Absolute Pressure Barometric Pressure Correlation
P0070 Ambient Air Temperature Sensor Circuit
P0071 Ambient Air Temperature Sensor Range/Performance
P0072 Ambient Air Temperature Sensor Circuit Low
P0073 Ambient Air Temperature Sensor Circuit High
P0074 Ambient Air Temperature Sensor Circuit Intermittent
P0075 Intake Valve Control Solenoid Circuit (Bank 1)
P0076 Intake Valve Control Solenoid Circuit Low (Bank 1)
P0077 Intake Valve Control Solenoid Circuit High (Bank 1)
P0078 Exhaust Valve Control Solenoid Circuit (Bank 1)



P0079 Exhaust Valve Control Solenoid Circuit Low (Bank 1)
P0080 Exhaust Valve Control Solenoid Circuit High (Bank 1)
P0081 Intake Valve Control Solenoid Circuit (Bank 2)
P0082 Intake Valve Control Solenoid Circuit Low (Bank 2)
P0083 Intake Valve Control Solenoid Circuit High (Bank 2)
P0084 Exhaust Valve Control Solenoid Circuit (Bank 2)
P0085 Exhaust Valve Control Solenoid Circuit Low (Bank 2)
P0086 Exhaust Valve Control Solenoid Circuit High (Bank 2)
P0087 Fuel Rail/System Pressure - Too Low
P0088 Fuel Rail/System Pressure - Too High
P0089 Fuel Pressure Regulator 1 Performance
P0090 Fuel Pressure Regulator 1 Control Circuit
P0091 Fuel Pressure Regulator 1 Control Circuit Low
P0092 Fuel Pressure Regulator 1 Control Circuit High
P0093 Fuel System Leak Detected Large Leak
P0094 Fuel System Leak Detected Small Leak
P0095 Intake Air Temperature Sensor 2 Circuit
P0096 Intake Air Temperature Sensor 2 Circuit Range /Performance
P0097 Intake Air Temperature Sensor 2 Circuit Low
P0098 Intake Air Temperature Sensor 2 Circuit High
P0099 Intake Air Temperature Sensor 2 Circuit Intermittent/Erratic

P01XX Fuel and Air Metering

P0100 Mass or Volume Air Flow Circuit Malfunction
P0101 Mass or Volume Air Flow Circuit Range/Performance Problem
P0102 Mass or Volume Air Flow Circuit Low Input
P0103 Mass or Volume Air Flow Circuit High Input
P0104 Mass or Volume Air Flow Circuit Intermittent
P0105 Manifold Absolute Pressure/Barometric Pressure Circuit Malfunction
P0106 Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance Problem
P0107 Manifold Absolute Pressure/Barometric Pressure Circuit Low Input
P0108 Manifold Absolute Pressure/Barometric Pressure Circuit High Input
P0109 Manifold Absolute Pressure/Barometric Pressure Circuit Intermittent
P0110 Intake Air Temperature Circuit Malfunction
P0111 Intake Air Temperature Circuit Range/Performance Problem
P0112 Intake Air Temperature Circuit Low Input
P0113 Intake Air Temperature Circuit High Input
P0114 Intake Air Temperature Circuit Intermittent
P0115 Engine Coolant Temperature Circuit Malfunction
P0116 Engine Coolant Temperature Circuit Range/Performance Problem
P0117 Engine Coolant Temperature Circuit Low Input
P0118 Engine Coolant Temperature Circuit High Input
P0119 Engine Coolant Temperature Circuit Intermittent
P0120 Throttle Position Sensor/Switch A Circuit Malfunction
P0121 Throttle Position Sensor/Switch A Circuit Range/Performance Problem
P0122 Throttle Position Sensor/Switch A Circuit Low Input
P0123 Throttle Position Sensor/Switch A Circuit High Input
P0124 Throttle Position Sensor/Switch A Circuit Intermittent

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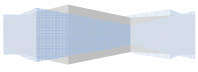
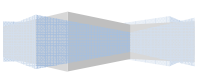


P0125 Insufficient Coolant Temperature for Closed Loop Fuel Control; ECT Excessive Time to Closed Loop Fuel Control
P0126 Insufficient Coolant Temperature for Stable Operation
P0127 IAT Sensor Too High
P0128 Coolant Thermostat Malfunction
P0129 Barometric Pressure Too Low
P0130 O2 Sensor Circuit Malfunction (Bank 1 Sensor 1)
P0131 O2 Sensor Circuit Low Voltage (Bank1 Sensor 1)
P0132 O2 Sensor Circuit High Voltage (Bank1 Sensor1)
P0133 O2 Sensor Circuit Slow Response (Bank1 Sensor 1)
P0134 O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 1)
P0135 O2 Sensor Heater Circuit Malfunction (Bank1 Sensor 1)
P0136 O2 Sensor Circuit Malfunction (Bank 1 Sensor 2)
P0137 O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2)
P0138 O2 Sensor Circuit High Voltage (Bank 1 Sensor 2)
P0139 O2 Sensor Circuit Slow Response (Bank 1 Sensor 2)
P0140 O2 Sensor Circuit No Activity Detected (Bank1 Sensor2)
P0141 O2 Sensor Heater Circuit Malfunction (Bank1 Sensor2)
P0142 O2 Sensor Circuit Malfunction (Bank 1 Sensor 3)
P0143 O2 Sensor Circuit Low Voltage (Bank1 Sensor 3)
P0144 O2 Sensor Circuit High Voltage (Bank 1 Sensor 3)
P0145 O2 Sensor Circuit Slow Response (Bank 1 Sensor 3)
P0146 O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 3)
P0147 O2 Sensor Heater Circuit Malfunction (Bank1 Sensor3)
P0148 Fuel Delivery Malfunction
P0149 Fuel Timing Malfunction
P0150 O2 Sensor Circuit Malfunction (Bank 2 Sensor 1)
P0151 O2 Sensor Circuit Low Voltage (Bank 2 Sensor 1)
P0152 O2 Sensor Circuit High Voltage (Bank 2 Sensor 1)
P0153 O2 Sensor Circuit Slow Response (Bank 2 Sensor 1)
P0154 O2 Sensor Circuit No Activity Detected (Bank2 Sensor1)
P0155 O2 Sensor Heater Circuit Malfunction (Bank2 Sensor 1)
P0156 O2 Sensor Circuit Malfunction (Bank 2 Sensor 2)
P0157 O2 Sensor Circuit Low Voltage (Bank 2 Sensor 2)
P0158 O2 Sensor Circuit High Voltage (Bank 2 Sensor 2)
P0159 O2 Sensor Circuit Slow Response (Bank 2 Sensor 2)
P0160 O2 Sensor Circuit No Activity Detected (Bank2 Sensor2)
P0161 O2 Sensor Heater Circuit Malfunction (Bank2 Sensor2)
P0162 O2 Sensor Circuit Malfunction (Bank 2 Sensor 3)
P0163 O2 Sensor Circuit Low Voltage (Bank 2 Sensor 3)
P0164 O2 Sensor Circuit High Voltage (Bank 2 Sensor 3)
P0165 O2 Sensor Circuit Slow Response (Bank 2 Sensor 3)
P0166 O2 Sensor Circuit No Activity Detected (Bank2 Sensor3)
P0167 O2 Sensor Heater Circuit Malfunction (Bank2 Sensor 3)
P0168 Engine Fuel Temperature Too High
P0169 Fuel Composition Incorrect
P0170 Fuel Trim Malfunction (Bank 1)
P0171 Fuel Trim too Lean (Bank 1)
P0172 Fuel Trim too Rich (Bank 1)
P0173 Fuel Trim Malfunction (Bank 2)
P0174 Fuel Trim too Lean (Bank 2)



P0175 Fuel Trim too Rich (Bank 2)
P0176 Fuel Composition Sensor Circuit Malfunction
P0177 Fuel Composition Sensor Circuit Range/Performance
P0178 Fuel Composition Sensor Circuit Low Input
P0179 Fuel Composition Sensor Circuit High Input
P0180 Fuel Temperature Sensor A Circuit Malfunction
P0181 Fuel Temperature Sensor A Circuit Range/ Performance
P0182 Fuel Temperature Sensor A Circuit Low Input
P0183 Fuel Temperature Sensor A Circuit High Input
P0184 Fuel Temperature Sensor A Circuit Intermittent
P0185 Fuel Temperature Sensor B Circuit Malfunction
P0186 Fuel Temperature Sensor B Circuit Range/ Performance
P0187 Fuel Temperature Sensor B Circuit Low Input
P0188 Fuel Temperature Sensor B Circuit High Input
P0189 Fuel Temperature Sensor B Circuit Intermittent
P0190 Fuel Rail Pressure Sensor Circuit Malfunction
P0191 Fuel Rail Pressure Sensor Circuit Range/ Performance
P0192 Fuel Rail Pressure Sensor Circuit Low Input
P0193 Fuel Rail Pressure Sensor Circuit High Input
P0194 Fuel Rail Pressure Sensor Circuit Intermittent
P0195 Engine Oil Temperature Sensor Malfunction
P0196 Engine Oil Temperature Sensor Range/ Performance
P0197 Engine Oil Temperature Sensor Low
P0198 Engine Oil Temperature Sensor High
P0199 Engine Oil Temperature Sensor Intermittent

P02XX Fuel and Air Metering

P0200 Injector Circuit Malfunction
P0201 Injector Circuit Malfunction - Cylinder 1
P0202 Injector Circuit Malfunction - Cylinder 2
P0203 Injector Circuit Malfunction - Cylinder 3
P0204 Injector Circuit Malfunction - Cylinder 4
P0205 Injector Circuit Malfunction - Cylinder 5
P0206 Injector Circuit Malfunction - Cylinder 6
P0207 Injector Circuit Malfunction - Cylinder 7
P0208 Injector Circuit Malfunction - Cylinder 8
P0209 Injector Circuit Malfunction - Cylinder 9
P0210 Injector Circuit Malfunction - Cylinder 10
P0211 Injector Circuit Malfunction - Cylinder 11
P0212 Injector Circuit Malfunction - Cylinder 12
P0213 Cold Start Injector 1 Malfunction
P0214 Cold Start Injector 2 Malfunction
P0215 Engine Shutoff Solenoid Malfunction
P0216 Injection Timing Control Circuit Malfunction
P0217 Engine Over temperature Condition
P0218 Transmission Over temperature Condition
P0219 Engine Over speed Condition
P0220 Throttle/Petal Position Sensor/Switch B Circuit Malfunction
P0221 Throttle/Petal Position Sensor/Switch B Circuit Range/Performance Problem

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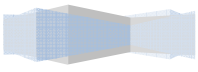
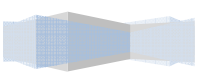


P0222 Throttle/Petal Position Sensor/Switch B Circuit Low Input
P0223 Throttle/Petal Position Sensor/Switch B Circuit High Input
P0224 Throttle/Petal Position Sensor/Switch B Circuit Intermittent
P0225 Throttle/Petal Position Sensor/Switch C Circuit Malfunction
P0226 Throttle/Petal Position Sensor/Switch C Circuit Range/Performance Problem
P0227 Throttle/Petal Position Sensor/Switch C Circuit Low Input
P0228 Throttle/Petal Position Sensor/Switch C Circuit High Input
P0229 Throttle/Petal Position Sensor/Switch C Circuit Intermittent
P0230 Fuel Pump Primary Circuit Malfunction
P0231 Fuel Pump Secondary Circuit Low
P0232 Fuel Pump Secondary Circuit High
P0233 Fuel Pump Secondary Circuit Intermittent
P0234 Engine Over boost Condition
P0235 Turbocharger Boost Sensor A Circuit Malfunction
P0236 Turbocharger Boost Sensor A Circuit Range/Performance
P0237 Turbocharger Boost Sensor A Circuit Low
P0238 Turbocharger Boost Sensor A Circuit High
P0239 Turbocharger Boost Sensor B Malfunction
P0240 Turbocharger Boost Sensor B Circuit Range /Performance
P0241 Turbocharger Boost Sensor B Circuit Low
P0242 Turbocharger Boost Sensor B Circuit High
P0243 Turbocharger Waste gate Solenoid A Malfunction
P0244 Turbocharger Waste gate Solenoid A Range/ Performance
P0245 Turbocharger Waste gate Solenoid A Low
P0246 Turbocharger Waste gate Solenoid A High
P0247 Turbocharger Waste gate Solenoid B Malfunction
P0248 Turbocharger Waste gate Solenoid B Range/ Performance
P0249 Turbocharger Waste gate Solenoid B Low
P0250 Turbocharger Waste gate Solenoid B High
P0251 Injection Pump Fuel Metering Control "A" Malfunction (Cam/Rotor/Injector)
P0252 Injection Pump Fuel Metering Control "A" Range/Performance (Cam/Rotor/Injector)
P0253 Injection Pump Fuel Metering Control "A" Low (Cam/Rotor/Injector)
P0254 Injection Pump Fuel Metering Control "A" High (Cam/Rotor/Injector)
P0255 Injection Pump Fuel Metering Control "A" intermittent (Cam/Rotor/Injector)
P0256 Injection Pump Fuel Metering Control "B" Malfunction (Cam/Rotor/Injector)
P0257 Injection Pump Fuel Metering Control "B" Range/Performance (Cam/Rotor/Injector)
P0258 Injection Pump Fuel Metering Control "B" Low (Cam/Rotor/Injector)
P0259 Injection Pump Fuel Metering Control "B" High (Cam/Rotor/Injector)
P0260 Injection Pump Fuel Metering Control "B" Intermittent (Cam/Rotor/Injector)
P0261 Cylinder 1 Injector Circuit Low
P0262 Cylinder 1 Injector Circuit High
P0263 Cylinder 1 Contribution/Balance Fault
P0264 Cylinder 2 Injector Circuit Low
P0265 Cylinder 2 Injector Circuit High
P0266 Cylinder 2 Contribution/Balance Fault
P0267 Cylinder 3 Injector Circuit Low
P0268 Cylinder 3 Injector Circuit High
P0269 Cylinder 3 Contribution/Balance Fault
P0270 Cylinder 4 Injector Circuit Low

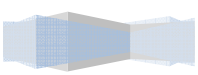


P0271 Cylinder 4 Injector Circuit High
P0272 Cylinder 4 Contribution/Balance Fault
P0273 Cylinder 5 Injector Circuit Low
P0274 Cylinder 5 Injector Circuit High
P0275 Cylinder 5 Contribution/Balance Fault
P0276 Cylinder 6 Injector Circuit Low
P0277 Cylinder 6 Injector Circuit High
P0278 Cylinder 6 Contribution/Balance Fault
P0279 Cylinder 7 Injector Circuit Low
P0280 Cylinder 7 Injector Circuit High
P0281 Cylinder 7 Contribution/Balance Fault
P0282 Cylinder 8 Injector Circuit Low
P0283 Cylinder 8 Injector Circuit High
P0284 Cylinder 8 Contribution/Balance Fault
P0285 Cylinder 9 Injector Circuit Low
P0286 Cylinder 9 Injector Circuit High
P0287 Cylinder 9 Contribution/Balance Fault
P0288 Cylinder 10 Injector Circuit Low
P0289 Cylinder 10 Injector Circuit High
P0290 Cylinder 10 Contribution/Balance Fault
P0291 Cylinder 11 Injector Circuit Low
P0292 Cylinder 11 Injector Circuit High
P0293 Cylinder 11 Contribution/Balance Fault
P0294 Cylinder 12 Injector Circuit Low
P0295 Cylinder 12 Injector Circuit High
P0296 Cylinder 12 Contribution/Range Fault
P0298 Engine Oil over Temperature
P0299 Turbo/Super Charger Underboost

P03XX Ignition System or Misfire

P0300 Random/Multiple Cylinder Misfire Detected
P0301 Cylinder 1 Misfire Detected
P0302 Cylinder 2 Misfire Detected
P0303 Cylinder 3 Misfire Detected
P0304 Cylinder 4 Misfire Detected
P0305 Cylinder 5 Misfire Detected
P0306 Cylinder 6 Misfire Detected
P0307 Cylinder 7 Misfire Detected
P0308 Cylinder 8 Misfire Detected
P0309 Cylinder 9 Misfire Detected
P0310 Cylinder 10 Misfire Detected
P0311 Cylinder 11 Misfire Detected
P0312 Cylinder 12 Misfire Detected
P0313 Misfire Detected Low Fuel Level
P0314 Misfire Detected Cylinder Not Specific
P0315 Crankshaft Position System Variation Not Learned
P0316 Misfire Detected 1st 1000 Revolutions
P0317 Rough Road Hardware Not Present
P0318 Rough Road Sensor A Signal Circuit
P0319 Rough Road Sensor B

P0320 Ignition/Distributor Engine Speed Input Circuit Malfunction
P0321 Ignition/Distributor Engine Speed Input Circuit Range/Performance
P0322 Ignition/Distributor Engine Speed Input Circuit No Signal
P0323 Ignition/Distributor Engine Speed Input Circuit Intermittent
P0324 Knock Control System Error
P0325 Knock Sensor 1 Circuit Malfunction (Bank 1 or Single Sensor)
P0326 Knock Sensor 1 Circuit Range/Performance (Bank 1 or Single Sensor)
P0327 Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)
P0328 Knock Sensor 1 Circuit High Input (Bank 1 or Single Sensor)
P0329 Knock Sensor 1 Circuit Intermittent (Bank 1 or Single Sensor)
P0330 Knock Sensor 2 Circuit Malfunction (Bank 2)
P0331 Knock Sensor 2 Circuit Range/Performance (Bank 2)
P0332 Knock Sensor 2 Circuit Low Input (Bank 2)
P0333 Knock Sensor 2 Circuit High Input (Bank 2)
P0334 Knock Sensor 2 Circuit Intermittent (Bank 2)
P0335 Crankshaft Position Sensor A Circuit Malfunction
P0336 Crankshaft Position Sensor A Circuit Range/Performance
P0337 Crankshaft Position Sensor A Circuit Low Input
P0338 Crankshaft Position Sensor A Circuit High Input
P0339 Crankshaft Position Sensor A CKT Intermittent
P0340 Camshaft Position Sensor A – Bank 1 Circuit Malfunction
P0341 Camshaft Position Sensor A – Bank 1 CKT Circuit Range/ Performance
P0342 Camshaft Position Sensor A – Bank 1 Circuit Low Input
P0343 Camshaft Position Sensor A – Bank 1 Circuit High Input
P0344 Camshaft Position Sensor A – Bank 1 Circuit Intermittent
P0345 Camshaft Position Sensor A – Bank 2 Circuit Malfunction
P0346 Camshaft Position Sensor A – Bank 2 CKT Range / Performance
P0347 Camshaft Position Sensor A – Bank 2 Circuit Low Input
P0348 Camshaft Position Sensor A – Bank 2 Circuit High Input
P0349 Camshaft Position Sensor A – Bank 2 CKT Intermittent
P0350 Ignition Coil Primary/Secondary Circuit Malfunction
P0351 Ignition Coil A Primary/Secondary Circuit Malfunction
P0352 Ignition Coil B Primary/Secondary Circuit Malfunction
P0353 Ignition Coil C Primary/Secondary Circuit Malfunction
P0354 Ignition Coil D Primary/Secondary Circuit Malfunction
P0355 Ignition Coil E Primary/Secondary Circuit Malfunction
P0356 Ignition Coil F Primary/Secondary Circuit Malfunction
P0357 Ignition Coil G Primary/Secondary Circuit Malfunction
P0358 Ignition Coil H Primary/Secondary Circuit Malfunction
P0359 Ignition Coil I Primary/Secondary Circuit Malfunction
P0360 Ignition Coil J Primary/Secondary Circuit Malfunction
P0361 Ignition Coil K Primary/Secondary Circuit Malfunction
P0362 Ignition Coil L Primary/Secondary Circuit Malfunction
P0363 Misfire Detected Fueling Disabled
P0365 Camshaft Position Sensor B – Bank 1 Circuit Malfunction
P0366 Camshaft Position Sensor B – Bank 1 CKT Range / Performance
P0367 Camshaft Position Sensor B – Bank 1 Circuit Low Input
P0368 Camshaft Position Sensor B – Bank 1 Circuit High Input
P0369 Camshaft Position Sensor B – Bank 1 CKT Intermittent
P0370 Timing Reference High Resolution Signal A Malfunction
P0371 Timing Reference High Resolution Signal A Too Many Pulses



P0372 Timing Reference High Resolution Signal A Too Few Pulses
P0373 Timing Reference High Resolution Signal A Intermittent/Erratic Pulses
P0374 Timing Reference High Resolution Signal A No Pulses
P0375 Timing Reference High Resolution Signal B Malfunction
P0376 Timing Reference High Resolution Signal B Too Many Pulses
P0377 Timing Reference High Resolution Signal B Too Few Pulses
P0378 Timing Reference High Resolution Signal B Intermittent /Erratic Pulses
P0379 Timing Reference High Resolution Signal B No Pulses
P0380 Glow Plug/Heater Circuit "A" Malfunction
P0381 Glow Plug/Heater Indicator Circuit Malfunction
P0382 Exhaust Gas Recirculation Flow Malfunction
P0383 Glow Plug Module Control Circuit Low
P0384 Glow Plug Module Control Circuit High
P0385 Crankshaft Position Sensor B Circuit Malfunction
P0386 Crankshaft Position Sensor B Circuit Range/ Performance
P0387 Crankshaft Position Sensor B Circuit Low Input
P0388 Crankshaft Position Sensor B Circuit High Input
P0389 Crankshaft Position Sensor B Circuit Intermittent
P0390 Camshaft Position Sensor "B" Circuit
P0391 Camshaft Position Sensor "B" circuit Range /Performance (B2)
P0392 Camshaft Position Sensor "B" Circuit Low Input (B2)
P0393 Camshaft Position Sensor "B" Circuit High Input (B2)
P0394 Camshaft Position Sensor "B" Circuit Intermittent (B2)

P04XX Auxiliary Emission Controls

P0400 Exhaust Gas Recirculation Flow Malfunction
P0401 Exhaust Gas Recirculation Flow Insufficient Detected
P0402 Exhaust Gas Recirculation Flow Excessive Detected
P0403 Exhaust Gas Recirculation Circuit Malfunction
P0404 Exhaust Gas Recirculation Circuit Range/ Performance
P0405 Exhaust Gas Recirculation Sensor A Circuit Low
P0406 Exhaust Gas Recirculation Sensor A Circuit High
P0407 Exhaust Gas Recirculation Sensor B Circuit Low
P0408 Exhaust Gas Recirculation Sensor B Circuit High
P0409 Exhaust Gas Recirculation Sensor "A" Circuit
P0410 Secondary Air Injection System Malfunction
P0411 Secondary Air Injection System Incorrect Flow Detected
P0412 Secondary Air Injection System Switching Valve A Circuit Malfunction
P0413 Secondary Air Injection System Switching Valve A Circuit Open
P0414 Secondary Air Injection System Switching Valve A Circuit Shorted
P0415 Secondary Air Injection System Switching Valve B Circuit Malfunction
P0416 Secondary Air Injection System Switching Valve B Circuit Open
P0417 Secondary Air Injection System Switching Valve B Circuit Shorted
P0418 Secondary Air Injection System Relay "A" Circuit Malfunction
P0419 Secondary Air Injection System Relay "B" Circuit Malfunction
P0420 Catalyst System Efficiency below Threshold (B1)
P0421 Warm Up Catalyst Efficiency below Threshold (B1)
P0422 Main Catalyst Efficiency below Threshold (B1)
P0423 Heated Catalyst Efficiency below Threshold (B1)
P0424 Heated Catalyst Temperature below Threshold (B1)

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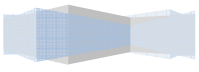
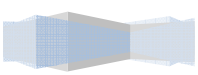


P0425 Catalyst Temperature Sensor (B1)
P0426 Catalyst Temperature Sensor Range / Performance (B1)
P0427 Catalyst Temperature Sensor Low Input (B1)
P0428 Catalyst Temperature Sensor High Input (B1)
P0429 Catalyst Heater Control Circuit (B1)
P0430 Catalyst System Efficiency below Threshold (B2)
P0431 Warm Up Catalyst Efficiency below Threshold (B2)
P0432 Main Catalyst Efficiency below Threshold (B2)
P0433 Heated Catalyst Efficiency below Threshold (B2)
P0434 Heated Catalyst Temperature below Threshold (B2)
P0435 Catalyst Temperature Sensor (B2)
P0436 Catalyst Temperature Sensor Range / Performance (B2)
P0437 Catalyst Temperature Sensor Low Input (B2)
P0438 Catalyst Temperature Sensor High Input (B2)
P0439 Catalyst Heater Control Circuit (B2)
P0440 Evaporative Emission Control System Malfunction
P0441 Evaporative Emission Control System Incorrect Purge Flow
P0442 Evaporative Emission Control System Leak Detected (small leak)
P0443 Evaporative Emission Control System Purge Control Valve Circuit Malfunction
P0444 Evaporative Emission Control System Purge Control Valve Circuit Open
P0445 Evaporative Emission Control System Purge Control Valve Circuit Shorted
P0446 Evaporative Emission Control System Vent Control Circuit Malfunction
P0447 Evaporative Emission Control System Vent Control Circuit Open
P0448 Evaporative Emission Control System Vent Control Circuit Shorted
P0449 Evaporative Emission Control System Vent Valve/Solenoid Circuit Malfunction
P0450 Evaporative Emission Control System Pressure Sensor Malfunction
P0451 Evaporative Emission Control System Pressure Sensor Range/Performance
P0452 Evaporative Emission Control System Pressure Sensor Low Input
P0453 Evaporative Emission Control System Pressure Sensor High Input
P0454 Evaporative Emission Control System Pressure Sensor Intermittent
P0455 Evaporative Emission Control System Leak Detected (Gross leak)
P0456 Evaporative Emission Control System Leak Detected (very small leak)
P0457 Evaporative Emission Control System Leak Detected (fuel cap loose/off)
P0458 Evaporative Emission System Purge Control Valve Circuit Low
P0459 Evaporative Emission System Purge Control Valve Circuit High
P0460 Fuel Level Sensor Circuit Malfunction
P0461 Fuel Level Sensor Circuit Range/Performance
P0462 Fuel Level Sensor Circuit Low Input
P0463 Fuel Level Sensor Circuit High Input
P0464 Fuel Level Sensor Circuit Intermittent
P0465 Purge Flow Sensor Circuit Malfunction
P0466 Purge Flow Sensor Circuit Range/Performance
P0467 Purge Flow Sensor Circuit Low Input
P0468 Purge Flow Sensor Circuit High Input
P0469 Purge Flow Sensor Circuit Intermittent
P0470 Exhaust Pressure Sensor Malfunction
P0471 Exhaust Pressure Sensor Range/Performance
P0472 Exhaust Pressure Sensor Low
P0473 Exhaust Pressure Sensor High
P0474 Exhaust Pressure Sensor Intermittent
P0475 Exhaust Pressure Control Valve Malfunction



P0476 Exhaust Pressure Control Valve Range/ Performance
P0477 Exhaust Pressure Control Valve Low
P0478 Exhaust Pressure Control Valve High
P0479 Exhaust Pressure Control Valve Intermittent
P0480 Cooling Fan 1 Control Circuit Malfunction
P0481 Cooling Fan 2 Control Circuit Malfunction
P0482 Cooling Fan 3 Control Circuit Malfunction
P0483 Cooling Fan Rationality Check Malfunction
P0484 Cooling Fan Circuit over Current
P0485 Cooling Fan Power/Ground Circuit Malfunction
P0486 Exhaust Gas Recirculation Sensor "B" Circuit
P0487 Exhaust Gas Recirculation Throttle Position Control Circuit
P0488 Exhaust Gas Recirculation Throttle Position Control Range/Performance
P0489 Exhaust Gas Recirculation Control Circuit Low
P0490 Exhaust Gas Recirculation Control Circuit High
P0491 Secondary Air Injection System (Bank 1)
P0492 Secondary Air Injection System (Bank 2)
P0493 Fan Overspeed
P0494 Fan Speed Low
P0495 Fan Speed High
P0496 Evaporative Emission System High Purge Flow
P0497 Evaporative Emission System Low Purge Flow
P0498 Evaporative Emission System Vent Valve Control Circuit Low
P0499 Evaporative Emission System Vent Valve Control Circuit High

P05XX Vehicle Speed, Idle Control, and Auxiliary Inputs

P0500 Vehicle Speed Sensor Malfunction
P0501 Vehicle Speed Sensor Range/Performance
P0502 Vehicle Speed Sensor Low Input
P0503 Vehicle Speed Sensor Intermittent/Erratic/High
P0505 Idle Control System Malfunction
P0506 Idle Control System RPM Lower Than Expected
P0507 Idle Control System RPM Higher Than Expected
P0508 Idle Control System Circuit Low
P0509 Idle Control System Circuit High
P0510 Closed Throttle Position Switch Malfunction
P0512 Starter Request Circuit
P0513 Incorrect Irnmobilizer Key ("Immobilizer pending SAE J1930 approval)
P0515 Battery Temperature Sensor Circuit
P0516 Battery Temperature Sensor Circuit Low
P0517 Battery Temperature Sensor Circuit High
P0520 Engine Oil Pressure Sensor/Switch Circuit Malfunction
P0521 Engine Oil Pressure Sensor/Switch Circuit Range/Performance
P0522 Engine Oil Pressure Sensor/Switch Circuit Low Voltage
P0523 Engine Oil Pressure Sensor/Switch Circuit High Voltage
P0524 Engine Oil Pressure Too Low
P0525 Cruise Servo CKT Range / Performance
P0526 Fan Speed Sensor Circuit
P0527 Fan Speed Sensor CKT Range / Performance
P0528 Fan Speed Sensor Circuit No Signal

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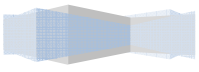
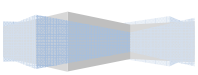


P0529 Fan Speed Sensor CKT Intermittent
P0530 A/C Refrigerant Pressure Sensor Circuit Malfunction
P0531 A/C Refrigerant Pressure Sensor Circuit Range/ Performance
P0532 A/C Refrigerant Pressure Sensor Circuit Low Input
P0533 A/C Refrigerant Pressure Sensor Circuit High Input
P0534 Air Conditioner Refrigerant Charge Loss
P0535 A/C Evaporator Temperature Sensor Circuit
P0536 A/C Evaporator Temperature Sensor CKT Range / Performance
P0537 A/C Evaporator Temperature Sensor Circuit Low
P0538 A/C Evaporator Temperature Sensor Circuit High
P0539 A/C Evaporator Temperature Sensor CKT Intermittent
P0540 Intake Air Heater A Circuit
P0541 Intake Air Heater A Circuit Low
P0542 Intake Air Heater A Circuit High
P0543 Intake Air Heater A Circuit Open
P0544 Exhaust Gas Temperature Sensor Circuit (Bank 1 Sensor 1)
P0545 Exhaust Gas Temperature Sensor Circuit Low (Bank 1 Sensor 1)
P0546 Exhaust Gas Temperature Sensor Circuit High (Bank 1 Sensor 1)
P0547 Exhaust Gas Temperature Sensor Circuit (Bank 2 Sensor 1)
P0548 Exhaust Gas Temperature Sensor Circuit Low (Bank 2 Sensor 1)
P0549 Exhaust Gas Temperature Sensor Circuit High (Bank 2 Sensor 1)
P0550 Power Steering Pressure Sensor Circuit Malfunction
P0551 Power Steering Pressure Sensor Circuit Range/ Performance
P0552 Power Steering Pressure Sensor Circuit Low Input
P0553 Power Steering Pressure Sensor Circuit High Input
P0554 Power Steering Pressure Sensor Circuit Intermittent
P0555 Brake Booster Pressure Sensor Circuit
P0556 Brake Booster Pressure Sensor CKT Range / Performance
P0557 Brake Booster Pressure Sensor Circuit Low
P0558 Brake Booster Pressure Sensor Circuit High
P0559 Brake Booster Pressure Sensor CKT Intermittent
P0560 System Voltage Malfunction
P0561 System Voltage Unstable
P0562 System Voltage Low; A/C pressure sensor low voltage (Chrysler)
P0563 System Voltage High
P0564 Cruise Control Multi-Function Input A Signal Error
P0565 Cruise Control ON Signal Malfunction
P0566 Cruise Control OFF Signal Malfunction
P0567 Cruise Control Resume Signal Malfunction
P0568 Cruise Control Set Signal Malfunction
P0569 Cruise Control Coast Signal Malfunction
P0570 Cruise Control Acceleration Signal Malfunction
P0571 Cruise Control/Brake Switch A Circuit Malfunction
P0572 Cruise Control/Brake Switch A Circuit Low
P0573 Cruise Control/Brake Switch A Circuit High
P0574 Cruise Control Vehicle Speed Too High
P0575 Cruise Control Circuit Malfunction
P0576 Cruise Control Circuit Low Input
P0577 Cruise Control Circuit High Input
P0578 Cruise Control Multi-Function Input A Circuit Stuck
P0579 Cruise Control Multi-Function Input A Circuit CKT Range / Performance



P0580 Cruise Control Multi-Function Input A Circuit Low
P0581 Cruise Control Multi-Function Input A Circuit High
P0582 Cruise Control Vacuum Control Circuit Open
P0583 Cruise Control Vacuum Control Circuit Low
P0584 Cruise Control Vacuum Control Circuit High
P0585 Cruise Control Multi-Function Input Correlation
P0586 Cruise Control Vent Control Circuit Open
P0587 Cruise Control Vent Control Circuit Low
P0588 Cruise Control Vent Control Circuit High
P0589 Cruise Control Multi-Function Input B Circuit
P0590 Cruise Control Multi-Function Input B Circuit Stuck
P0591 Cruise Control Multi-Function Input B Circuit
P0592 Cruise Control Multi-Function Input B Circuit Low
P0593 Cruise Control Multi-Function Input B Circuit High
P0594 Cruise Control Servo Control Circuit Open
P0595 Cruise Control Servo Control Circuit Low
P0596 Cruise Control Servo Control Circuit High
P0597 Cruise Control Circuit Open
P0598 Cruise Control Circuit Low
P0599 Cruise Control Circuit High

P06XX Computer and Auxiliary Inputs

P0600 Serial Communication Link Malfunction
P0601 Control Module Read Only Memory (ROM) Check Sum Error
P0602 Control Module Programming Error
P0603 Internal Control Module Keep Alive Memory (KAM) Error
P0604 Internal Control Module Random Access Memory (RAM) Error
P0605 Internal Control Module Read Only Memory (ROM) Error
P0606 PCM Processor Fault
P0608 Control Module VSS Output "A" Malfunction
P0609 Control Module VSS Output "B" Malfunction
P0610 Control Module Vehicle Options Malfunction
P0611 Injector Control Module Performance
P0612 Injector Control Module Relay Control
P0613 TCM Processor Fault
P0614 ECM/TCM Incompatible
P0615 Starter Relay Circuit
P0616 Starter Relay Circuit Low
P0617 Starter Relay Circuit high
P0618 Alternative Fuel Module (KAM) Error
P0619 Alternative Fuel Module Memory
P0620 Generator Control Circuit Malfunction
P0621 Generator Lamp "L" Control Circuit Malfunction
P0622 Generator Field "F" Control Circuit Malfunction
P0623 Generator Lamp Control Circuit
P0624 Fuel Cap Lamp Circuit
P0625 Generator Lamp "L" Control Circuit Low
P0626 Generator Lamp "F" Control Circuit High
P0627 Fuel Pump A Control Circuit Open
P0628 Fuel Pump A Control Circuit Low

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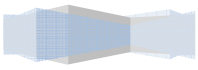
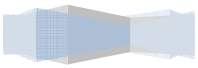


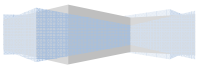
P0629 Fuel Pump A Control Circuit High
P0630 PCM Module VIN Not Program or Mismatch
P0631 TCM VIN Not Program or Mismatch
P0632 Odometer Code Not Programmed ECM/PCM
P0633 Immobilizer Code Not Programmed
P0634 PCM/ECM/TCM Internal Temperature Too High
P0635 Power Steering Control Circuit
P0636 Power Steering Control Circuit Low
P0637 Power Steering control Circuit High
P0638 Throttle Actuator Range / Performance (Bank 1)
P0639 Throttle Actuator range / Performance (Bank 2)
P0640 Intake Air Heater Control Circuit
P0641 Sensor A Reference Voltage Circuit Open
P0642 Sensor A Reference Voltage Circuit Low
P0643 Sensor A reference Voltage Circuit High
P0644 Driver Display Serial Communication Link
P0645 A/C Clutch Relay Control Circuit
P0646 A/C Clutch Relay Control Circuit Low
P0647 A/C Clutch Relay Control Circuit High
P0648 Immobilizer Lamp Circuit
P0649 Cruise Control Lamp Circuit
P0650 Malfunction Indicator Lamp (MIL) Control Circuit Malfunction
P0651 Sensor B Reference Voltage Circuit Open
P0652 Sensor B Reference Voltage Circuit Low
P0653 Sensor B Reference Voltage Circuit High
P0654 Engine RPM Output Circuit Malfunction
P0655 Engine Hot Lamp Output Control Circuit Malfunction
P0656 Fuel Level Output Circuit Malfunction
P0657 Actuator Supply Voltage A circuit Open
P0658 Actuator Supply Voltage A Circuit Low
P0659 Actuator supply Voltage A Circuit High
P0660 Intake Man Tuning Control CKT Open (Bank 1)
P0661 Intake Man Tuning Control CKT Low (Bank 1)
P0662 Intake Man Tuning Control CKT High (Bank 1)
P0663 Intake Man Tuning Control CKT Open (Bank 2)
P0664 Intake Man Tuning Control CKT Low (Bank 2)
P0665 Intake Man Tuning Control CKT High (Bank 2)
P0666 PCM/ECM/TCM Internal Temperature Sensor Circuit
P0667 PCM/ECM/TCM Internal Temperature Sensor Range/ Performance
P0668 PCM/ECM/TCM Internal Temperature Sensor Circuit Low
P0669 PCM/ECM/TCM Internal Temperature Sensor Circuit High
P0670 Glow Plug / Heater Module Control
P0671 Glow Plug / Heater Cylinder 1
P0672 Glow Plug / Heater Cylinder 2
P0673 Glow Plug / Heater Cylinder 3
P0674 Glow Plug / Heater Cylinder 4
P0675 Glow Plug / Heater Cylinder 5
P0676 Glow Plug / Heater Cylinder 6
P0677 Glow Plug / Heater Cylinder 7
P0678 Glow Plug / Heater Cylinder 8
P0679 Glow Plug / Heater Cylinder 9



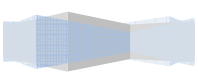
P0680 Glow Plug / Heater Cylinder 10
P0681 Glow Plug / Heater Cylinder 11
P0682 Glow Plug / Heater Cylinder 12
P0683 Glow Plug / Heater Module Communication Problem
P0684 Glow Plug / Heater Communication Problem CKT Range / Performance
P0685 ECM / PCM Power Relay Control Circuit Open
P0686 ECM / PCM Power Relay Control Circuit Low
P0687 ECM / PCM Power Relay Control Circuit High
P0688 ECM / PCM Power Relay Sense Circuit Open
P0689 ECM / PCM Power Relay Sense Circuit Low
P0698 ECM / PCM Power Relay Sense Circuit High
P0691 Fan 1 Control Circuit Low
P0692 Fan 1 Control Circuit High
P0693 Fan 2 Control Circuit Low
P0694 Fan 2 Control Circuit High
P0695 Fan 3 Control Circuit Low
P0696 Fan 3 Control Circuit High
P0697 Sensor C Reference Voltage Circuit Open
P0698 Sensor C Reference Voltage Circuit Low
P0699 Sensor C Reference Voltage Circuit High

P07XX Transmission

P0700 Transmission Control System Malfunction
P0701 Transmission Control System Range/ Performance
P0702 Transmission Control System Electrical
P0703 Torque Converter/Brake Switch B Circuit Malfunction
P0704 Clutch Switch Input Circuit Malfunction
P0705 Transmission Range Sensor Circuit malfunction (PRNDL Input)
P0706 Transmission Range Sensor Circuit Range/ Performance
P0707 Transmission Range Sensor Circuit Low Input
P0708 Transmission Range Sensor Circuit High Input
P0709 Transmission Range Sensor Circuit Intermittent
P0710 Transmission Fluid Temperature Sensor Circuit Malfunction
P0711 Transmission Fluid Temperature Sensor Circuit Range/Performance
P0712 Transmission Fluid Temperature Sensor Circuit Low Input
P0713 Transmission Fluid Temperature Sensor Circuit High Input
P0714 Transmission Fluid Temperature Sensor Circuit Intermittent
P0715 Input/Turbine Speed Sensor Circuit Malfunction
P0716 Input/Turbine Speed Sensor Circuit Range/ Performance
P0717 Input/Turbine Speed Sensor Circuit No Signal
P0718 Input/Turbine Speed Sensor Circuit Intermittent
P0719 Torque Converter/Brake Switch B Circuit Low
P0720 Output Speed Sensor Circuit Malfunction
P0721 Output Speed Sensor Range/Performance
P0722 Output Speed Sensor No Signal
P0723 Output Speed Sensor Intermittent
P0724 Torque Converter/Brake Switch B Circuit High
P0725 Engine Speed input Circuit Malfunction
P0726 Engine Speed Input Circuit Range/Performance
P0727 Engine Speed Input Circuit No Signal



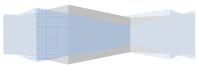
P0728 Engine Speed Input Circuit Intermittent
P0730 Incorrect Gear Ratio
P0731 Gear 1 Incorrect ratio
P0732 Gear 2 Incorrect ratio
P0733 Gear 3 Incorrect ratio
P0734 Gear 4 Incorrect ratio
P0735 Gear 5 Incorrect ratio
P0736 Reverse incorrect gear ratio
P0740 Torque Converter Clutch Circuit Malfunction
P0741 Torque Converter Clutch Circuit Performance or Stuck Off
P0742 Torque Converter Clutch Circuit Stuck On
P0743 Torque Converter Clutch Circuit Electrical
P0744 Torque Converter Clutch Circuit Intermittent
P0745 Pressure Control Solenoid Malfunction
P0746 Pressure Control Solenoid Performance or Stuck Off
P0747 Pressure Control Solenoid Stuck On
P0748 Pressure Control Solenoid Electrical
P0749 Pressure Control Solenoid Intermittent
P0750 Shift Solenoid A Malfunction
P0751 Shift Solenoid A Performance or Stuck Off/1-2 Shift Solenoid Valve Performance
P0752 Shift Solenoid A Stuck On
P0753 Shift Solenoid A Electrical/1-2 Shift Solenoid Circuit Electrical
P0754 Shift Solenoid A Intermittent
P0755 Shift Solenoid B Malfunction
P0756 Shift Solenoid B Performance or Stuck Off/2-3 Shift Solenoid Valve Performance
P0757 Shift Solenoid B Stuck On
P0758 Shift Solenoid B Electrical/2-3 Shift Solenoid Circuit Electrical
P0759 Shift Solenoid B Intermittent
P0760 Shift Solenoid C Malfunction
P0761 Shift Solenoid C Performance or Stuck Off
P0762 Shift Solenoid C Stuck On
P0763 Shift Solenoid C Electrical
P0764 Shift Solenoid C Intermittent
P0765 Shift Solenoid D Malfunction
P0766 Shift Solenoid D Performance or Stuck Off
P0767 Shift Solenoid D Stuck On
P0768 Shift Solenoid D Electrical
P0769 Shift Solenoid D Intermittent
P0770 Shift Solenoid E Malfunction
P0771 Shift Solenoid E Performance or Stuck Off
P0772 Shift Solenoid E Stuck On
P0773 Shift Solenoid E Electrical
P0774 Shift Solenoid E Intermittent
P0775 Pressure Control Solenoid B Malfunction
P0776 Pressure Control Solenoid B Performance
P0777 Pressure Control Solenoid B Stuck On
P0778 Pressure Control Solenoid B Electrical
P0779 Pressure Control Solenoid B Intermittent
P0780 Shift Malfunction
P0781 1-2 Shift Malfunction



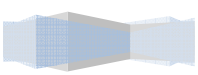
P0782 2-3 Shift Malfunction
P0783 3-4 Shift Malfunction
P0784 4-5 Shift Malfunction
P0785 Shift/Timing Solenoid Malfunction/ 3-2 Shift Solenoid Circuit Electrical
P0786 Shift/Timing Solenoid Range/Performance
P0787 Shift/Timing Solenoid Low
P0788 Shift/Timing Solenoid High
P0789 Shift/Timing Solenoid Intermittent
P0790 Normal/Performance Switch Circuit Malfunction
P0791 Intermediate Shaft Speed Sensor A Circuit
P0792 Intermediate Shaft Speed Sensor A Circuit Range / Performance
P0793 Intermediate Shaft Speed Sensor A Circuit No Signal
P0794 Intermediate Shaft Speed Sensor A Circuit CKT Intermittent
P0795 Pressure Control Solenoid C Malfunction
P0796 Pressure Control Solenoid C CKT Performance or Stuck Off
P0797 Pressure Control Solenoid C Circuit Stuck ON
P0798 Pressure Control Solenoid C Circuit Electrical
P0799 Pressure Control Solenoid C CKT Intermittent

P08XX Transmission

P0800 Transfer Case Control System MIL Request
P0801 Reverse Inhibit Control Circuit Malfunction
P0802 Trans Control System MIL Request Circuit Open
P0803 1-4 Upshift (Skip Shift) Solenoid Control Circuit Malfunction
P0804 1-4 Upshift (Skip Shift) Lamp Control Circuit Malfunction
P0805 Clutch Position Sensor Circuit Malfunction
P0806 Clutch Position Sensor Circuit Range / Performance
P0807 Clutch Position Sensor Circuit Low
P0808 Clutch Position Sensor Circuit High
P0809 Clutch Position Sensor Circuit Intermittent CKT
P0810 Clutch Position Control Malfunction
P0811 Clutch Slippage Excessive
P0812 Reverse Input Circuit Malfunction
P0813 Reverse Output Circuit Malfunction
P0814 Trans Range Display Circuit Malfunction
P0815 Upshift Switch Circuit Malfunction
P0816 Downshift Switch Circuit Malfunction
P0817 Starter Disable Circuit
P0818 Driveline Disconnected. Switch input
P0819 Up/Down Shift SW Transmission Range Correlation
P0820 Gear Lever X-Y Sensor Circuit
P0821 Gear Lever X Sensor Circuit
P0822 Gear Lever Y Sensor Circuit
P0823 Gear Lever X Sensor Circuit Intermittent CKT
P0824 Gear Lever Y Sensor Circuit Intermittent CKT
P0825 Gear Lever Push / Pull Switch (Shift Anticipated)
P0826 Upshift Switch Downshift Switch Circuit
P0827 Upshift Switch Downshift Switch Circuit Low
P0828 Upshift Switch Downshift Switch Circuit High
P0829 5-6 Shift



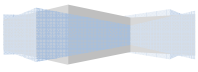
P0830 Clutch Position Switch A Circuit Malfunction
P0831 Clutch Position Switch A Circuit Low
P0832 Clutch Position Switch A Circuit High
P0833 Clutch Position Switch B Circuit Malfunction
P0834 Clutch Position Switch B Circuit Low
P0835 Clutch Position Switch A Circuit High
P0836 4 Wheel Drive Switch Circuit Malfunction
P0837 4 Wheel Drive Switch CKT Range / Performance
P0838 4 Wheel Drive Switch Circuit Low
P0839 4 Wheel Drive Switch Circuit High
P0840 Transmission Fluid Pressure Sensor Switch A Circuit Malfunction
P0841 Transmission Fluid Pressure Sensor Switch A CKT Range / Performance
P0842 Transmission Fluid Pressure Sensor Switch A Circuit Low
P0843 Transmission Fluid Pressure Sensor Switch A Circuit High
P0844 Transmission Fluid Pressure Sensor Switch A CKT Intermittent
P0845 Transmission Fluid Pressure Sensor Switch B Circuit Malfunction
P0846 Transmission Fluid Pressure Sensor Switch B CKT Range / Performance
P0847 Transmission Fluid Pressure Sensor Switch B Circuit Low
P0848 Transmission Fluid Pressure Sensor Switch B High
P0849 Transmission Fluid Pressure Sensor Switch B CKT Intermittent
P0850 Park / Neutral Switch Input Circuit
P0851 Park / Neutral Switch Circuit Low Input
P0852 Park / Neutral Switch Circuit High Input
P0853 Drive Switch Input Circuit
P0854 Drive Switch Circuit Low Input
P0855 Drive Switch Circuit High Input
P0856 Traction Control Input Signal
P0857 Traction Control Input Signal Range / Performance
P0858 Traction Control Input Signal Low
P0859 Traction Control input Signal High
P0860 Gear Shift Module Communication Circuit
P0861 Gear Shift Module Communication Circuit Low
P0862 Gear Shift Module Communication Circuit high
P0863 TCM Communication Circuit
P0864 TCM Communication Circuit Range / Performance
P0865 TCM Communication Circuit Low
P0866 TCM Communication Circuit High
P0867 Transmission Fluid Pressure
P0868 Transmission Fluid Pressure Low
P0869 Transmission Fluid Pressure High
P0870 Transmission Fluid Pressure Sensor Switch C Circuit
P0871 Transmission Fluid Pressure Sensor Switch C CKT Range / Performance
P0872 Transmission Fluid Pressure Sensor Switch C Circuit Low
P0873 Transmission Fluid Pressure Sensor Switch C Circuit High
P0874 Transmission Fluid Pressure Sensor Switch C CKT Intermittent
P0875 Transmission Fluid Pressure Sensor Switch D Circuit
P0876 Transmission Fluid Pressure Sensor Switch D CKT Range / Performance
P0877 Transmission Fluid Pressure Sensor Switch D Circuit Low
P0878 Transmission Fluid Pressure Sensor Switch D Circuit High
P0879 Transmission Fluid Pressure Sensor Switch D CKT Intermittent
P0880 TCM Power Input Signal



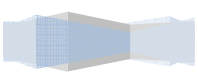
P0881 TCM Power Input Signal Range / Performance
P0882 TCM Power Input Signal Low
P0883 TCM Power Input Signal High
P0884 TCM Power Input Signal CKT Intermittent
P0885 TCM Power Relay Control Circuit Open
P0886 TCM Power Relay Control Circuit Low
P0887 TCM Power Relay Control Circuit High
P0888 TCM Power Relay Sensing Circuit
P0889 TCM Power Relay Sensing CKT Range / Performance
P0890 TCM Power Relay Sensing Circuit Low
P0891 TCM Power Relay Sensing Circuit High
P0892 TCM Power Relay Sensing CKT Intermittent
P0893 Multiple Gears Engaged
P0894 Transmission Comp. Slipping
P0895 Shift Time Too Short
P0896 Shift Time Too Long
P0897 Transmission Fluid Deteriorated
P0898 Transmission Control MIL Request Circuit Low
P0899 Transmission Control MIL Request Circuit High

P09XX Transmission

P0900 Clutch Actuator Circuit Open
P0901 Clutch Actuator CKT Range / Performance
P0902 Clutch Actuator Circuit Low
P0903 Clutch Actuator Circuit High
P0904 Gate Select Position Circuit
P0905 Gate Select Position CKT Range / Performance
P0906 Gate Select Position Circuit Low
P0907 Gate Select Position Circuit High
P0908 Gate Select Position CKT Intermittent
P0909 Gate Select Control Error
P0910 Gate Select Actuator Circuit Open
P0911 Gate Select Actuator CKT Range / Performance
P0912 Gate Select Actuator Circuit Low
P0913 Gate Select Actuator Circuit High
P0914 Gear Shift Position Circuit
P0915 Gear Shift Position CKT Range / Performance
P0916 Gear Shift Position Circuit Low
P0917 Gear Shift Position Circuit High
P0918 Gear Shift Position CKT Intermittent
P0919 Gear Shift Position Control Error
P0920 Gear Shift Forward Actuator Circuit Open
P0921 Gear Shift Forward Actuator CKT Range / Performance
P0922 Gear Shift Forward Actuator Circuit Low
P0923 Gear Shift Forward Actuator Circuit High
P0924 Gear Shift Reverse Actuator Circuit Open
P0925 Gear Shift Reverse Actuator CKT Range/ Performance
P0926 Gear Shift Reverse Actuator Circuit Low
P0927 Gear Shift Reverse Actuator Circuit High
P0928 Gear Shift Lock Solenoid Control Circuit Open



P0929 Gear Shift Lock Solenoid Control CKT Range / Performance
P0930 Gear Shift Lock Solenoid Control Circuit Low
P0931 Gear Shift Lock Solenoid Control Circuit High
P0932 Hydraulic Pressure Sensor Circuit
P0933 Hydraulic Pressure Sensor CKT Range / Performance
P0934 Hydraulic Pressure Sensor Circuit Low
P0935 Hydraulic Pressure Sensor Circuit High
P0936 Hydraulic Pressure Sensor CKT Intermittent
P0937 Hydraulic Oil Temperature Sensor Circuit
P0938 Hydraulic Oil Temperature Sensor CKT Range/ Performance
P0939 Hydraulic Oil Temperature Sensor Circuit Low
P0940 Hydraulic Oil Temperature Sensor Circuit high
P0941 Hydraulic Oil Temperature Sensor CKT Intermittent
P0942 Hydraulic Pressure Unit
P0943 Hydraulic Pressure Unit Cycling Too Short
P0944 Hydraulic Pressure Unit Loss of Pressure
P0945 Hydraulic Pump Relay Circuit Open
P0946 Hydraulic Pump Relay CKT Range / Performance
P0947 Hydraulic Pump Relay Circuit Low
P0948 Hydraulic Pump Relay Circuit High
P0949 Auto Shift Adaptive Learning Not Complete
P0950 Auto Shift Manual Control Circuit
P0951 Auto Shift Manual Control CKT Range / Performance
P0952 Auto Shift Manual Control Circuit Low
P0953 Auto Shift Manual Control Circuit High
P0954 Auto Shift Manual Control CKT Intermittent
P0955 Auto Shift Manual Mode Circuit
P0956 Auto Shift Manual Mode CKT Range/ Performance
P0957 Auto Shift Manual Mode Circuit Low
P0958 Auto Shift Manual Mode Circuit High
P0959 Auto Shift Manual Mode CKT Intermittent
P0960 Pressure Control Solenoid A Control Circuit Open
P0961 Pressure Control Solenoid A Control CKT Range / Performance
P0962 Pressure Control Solenoid A Control Circuit Low
P0963 Pressure Control Solenoid A Control Circuit High
P0964 Pressure Control Solenoid B Control Circuit Open
P0965 Pressure Control Solenoid B Control CKT Range / Performance
P0966 Pressure Control Solenoid B Control Circuit Low
P0967 Pressure Control Solenoid B Control Circuit High
P0968 Pressure Control Solenoid C Control Circuit Open
P0969 Pressure Control Solenoid C Control CKT Range / Performance
P0970 Pressure Control Solenoid C Control Circuit Low
P0971 Pressure Control Solenoid C Control Circuit High
P0972 Shift Solenoid A Control CKT Range / Performance
P0973 Shift Solenoid A Control Circuit Low
P0974 Shift Solenoid A Control Circuit High
P0975 Shift Solenoid B Control CKT Range / Performance
P0976 Shift Solenoid B Control Circuit Low
P0977 Shift Solenoid B Control Circuit High
P0978 Shift Solenoid C Control CKT Range / Performance
P0979 Shift Solenoid C Control Circuit Low



P0980 Shift Solenoid C Control Circuit High
P0981 Shift Solenoid D Control CKT Range / Performance
P0982 Shift Solenoid D Control Circuit Low
P0983 Shift Solenoid D Control Circuit High
P0984 Shift Solenoid E Control CKT Range / Performance
P0985 Shift Solenoid E Control Circuit Low
P0986 Shift Solenoid E Control Circuit High
P0987 Transmission Fluid Pressure Sensor Switch E Circuit
P0988 Transmission Fluid Pressure Sensor Switch E CKT Range / Performance
P0989 Transmission Fluid Pressure Sensor Switch E Circuit Low
P0990 Transmission Fluid Pressure Sensor Switch E Circuit High
P0991 Transmission Fluid Pressure Sensor Switch E CKT Intermittent
P0992 Transmission Fluid Pressure Sensor Switch F Circuit
P0993 Transmission Fluid Pressure Sensor Switch F CKT Range / Performance
P0994 Transmission Fluid Pressure Sensor Switch F Circuit Low
P0995 Transmission Fluid Pressure Sensor Switch F Circuit High
P0996 Transmission Fluid Pressure Sensor Switch F CKT Intermittent
P0997 Shift Solenoid F Control CKT Range / Performance
P0998 Shift Solenoid F Control Circuit Low
P0999 Shift Solenoid F Control Circuit High

P0AXX Hybrid Propulsion

P0A00 Motor Electronics Coolant Temperature Sensor Circuit
P0A01 Motor Electronics Coolant Temperature Sensor Circuit Range/Performance
P0A02 Motor Electronics Coolant Temperature Sensor Circuit Low
P0A03 Motor Electronics Coolant Temperature Sensor Circuit High
P0A04 Motor Electronics Coolant Temperature Sensor Circuit Intermittent
P0A05 Motor Electronics Coolant Pump Control Circuit/Open
P0A06 Motor Electronics Coolant Pump Control Circuit Low
P0A07 Motor Electronics Coolant Pump Control Circuit High
P0A08 DC/DC Converter Status Circuit
P0A09 DC/DC Converter Status Circuit Low Input
P0A10 DC/DC Converter Status Circuit High Input
P0A11 DC/DC Converter Enable Circuit/Open
P0A12 DC/DC Converter Enable Circuit Low
P0A13 DC/DC Converter Enable Circuit High
P0A14 Engine Mount Control Circuit/Open
P0A15 Engine Mount Control Circuit Low
P0A16 Engine Mount Control Circuit High
P0A17 Motor Torque Sensor Circuit
P0A18 Motor Torque Sensor Circuit Range/Performance
P0A19 Motor Torque Sensor Circuit Low
P0A20 Motor Torque Sensor Circuit High
P0A21 Motor Torque Sensor Circuit Intermittent
P0A22 Generator Torque Sensor Circuit
P0A23 Generator Torque Sensor Circuit Range/Performance
P0A24 Generator Torque Sensor Circuit Low
P0A25 Generator Torque Sensor Circuit High
P0A26 Generator Torque Sensor Circuit Intermittent
P0A27 Battery Power Off Circuit

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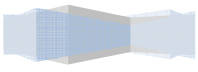

P0A28 Battery Power Off Circuit Low
P0A29 Battery Power Off Circuit High

P20XX Fuel and Air Metering and Auxiliary Emission Controls

P2000 NOx Trap Efficiency Below Threshold
P2001 NOx Trap Efficiency Below Threshold
P2002 Particulate Trap Efficiency Below Threshold
P2003 Particulate Trap Efficiency Below Threshold
P2004 Intake Manifold Runner Control Stuck Open
P2005 Intake Manifold Runner Control Stuck Open
P2006 Intake Manifold Runner Control Stuck Closed
P2007 Intake Manifold Runner Control Stuck Closed
P2008 Intake Manifold Runner Control Circuit/Open
P2009 Intake Manifold Runner Control Circuit Low
P2010 Intake Manifold Runner Control Circuit High
P2011 Intake Manifold Runner Control Circuit/Open
P2012 Intake Manifold Runner Control Circuit Low
P2013 Intake Manifold Runner Control Circuit High
P2014 Intake Manifold Runner Position Sensor/Switch Circuit
P2015 Intake Manifold Runner Position Sensor/Switch Circuit Range/Performance
P2016 Intake Manifold Runner Position Sensor/Switch Circuit Low
P2017 Intake Manifold Runner Position Sensor/Switch Circuit High
P2018 Intake Manifold Runner Position Sensor/Switch Circuit Intermittent
P2019 Intake Manifold Runner Position Sensor/Switch Circuit
P2020 Intake Manifold Runner Position Sensor/Switch Circuit Range/Performance
P2021 Intake Manifold Runner Position Sensor/Switch Circuit Low
P2022 Intake Manifold Runner Position Sensor/Switch Circuit High
P2023 Intake Manifold Runner Position Sensor/Switch Circuit Intermittent
P2024 Evaporative Emissions (EVAP) Fuel Vapor Temperature Sensor Circuit
P2025 Evaporative Emissions (EVAP) Fuel Vapor Temperature Sensor Performance
P2026 Evaporative Emissions (EVAP) Fuel Vapor Temperature Sensor Circuit Low Voltage
P2027 Evaporative Emissions (EVAP) Fuel Vapor Temperature Sensor Circuit High Voltage
P2028 Evaporative Emissions (EVAP) Fuel Vapor Temperature Sensor Circuit Intermittent
P2029 Fuel Fired Heater Disabled
P2030 Fuel Fired Heater Performance
P2031 Exhaust Gas Temperature Sensor Circuit
P2032 Exhaust Gas Temperature Sensor Circuit Low
P2033 Exhaust Gas Temperature Sensor Circuit High
P2034 Exhaust Gas Temperature Sensor Circuit
P2035 Exhaust Gas Temperature Sensor Circuit Low
P2036 Exhaust Gas Temperature Sensor Circuit High
P2037 Reductant Injection Air Pressure Sensor Circuit
P2038 Reductant Injection Air Pressure Sensor Circuit Range/Performance
P2039 Reductant Injection Air Pressure Sensor Circuit Low Input
P2040 Reductant Injection Air Pressure Sensor Circuit High Input
P2041 Reductant Injection Air Pressure Sensor Circuit Intermittent
P2042 Reductant Temperature Sensor Circuit

P2043 Reductant Temperature Sensor Circuit Range/Performance
P2044 Reductant Temperature Sensor Circuit Low Input
P2045 Reductant Temperature Sensor Circuit High Input
P2046 Reductant Temperature Sensor Circuit Intermittent
P2047 Reductant Injector Circuit/Open
P2048 Reductant Injector Circuit Low
P2049 Reductant Injector Circuit High
P2050 Reductant Injector Circuit/Open
P2051 Reductant Injector Circuit Low
P2052 Reductant Injector Circuit High
P2053 Reductant Injector Circuit/Open
P2054 Reductant Injector Circuit Low
P2055 Reductant Injector Circuit High
P2056 Reductant Injector Circuit/Open
P2057 Reductant Injector Circuit Low
P2058 Reductant Injector Circuit High
P2059 Reductant Injection Air Pump Control Circuit/Open
P2060 Reductant Injection Air Pump Control Circuit Low
P2061 Reductant Injection Air Pump Control Circuit High
P2062 Reductant Supply Control Circuit/Open
P2063 Reductant Supply Control Circuit Low
P2064 Reductant Supply Control Circuit High
P2065 Fuel Level Sensor "B" Circuit
P2066 Fuel Level Sensor "B" Performance
P2067 Fuel Level Sensor "B" Circuit Low
P2068 Fuel Level Sensor "B" Circuit High
P2069 Fuel Level Sensor "B" Circuit Intermittent
P2070 Intake Manifold Tuning (IMT) Valve Stuck Open
P2071 Intake Manifold Tuning (IMT) Valve Stuck Closed
P2075 Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit
P2076 Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit Range/Performance
P2077 Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit Low
P2078 Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit High
P2079 Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit Intermittent
P2080 Exhaust Gas Temperature Sensor Circuit Range/Performance
P2081 Exhaust Gas Temperature Sensor Circuit Intermittent
P2082 Exhaust Gas Temperature Sensor Circuit Range/Performance
P2083 Exhaust Gas Temperature Sensor Circuit Intermittent
P2084 Exhaust Gas Temperature Sensor Circuit Range/Performance
P2085 Exhaust Gas Temperature Sensor Circuit Intermittent
P2086 Exhaust Gas Temperature Sensor Circuit Range/Performance
P2087 Exhaust Gas Temperature Sensor Circuit Intermittent
P2088 "A" Camshaft Position Actuator Control Circuit Low
P2089 "A" Camshaft Position Actuator Control Circuit High
P2090 "B" Camshaft Position Actuator Control Circuit Low
P2091 "B" Camshaft Position Actuator Control Circuit High
P2092 "A" Camshaft Position Actuator Control Circuit Low
P2093 "A" Camshaft Position Actuator Control Circuit High
P2094 "B" Camshaft Position Actuator Control Circuit Low
P2095 "B" Camshaft Position Actuator Control Circuit High

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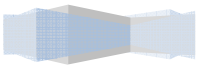

P2096 Post Catalyst Fuel Trim System Too Lean
P2097 Post Catalyst Fuel Trim System Too Rich
P2098 Post Catalyst Fuel Trim System Too Lean
P2099 Post Catalyst Fuel Trim System Too Rich

P21XX Fuel and Air Metering

P2100 Throttle Actuator Control Motor Circuit/Open
P2101 Throttle Actuator Control Motor Circuit Range/Performance
P2102 Throttle Actuator Control Motor Circuit Low
P2103 Throttle Actuator Control Motor Circuit High
P2104 Throttle Actuator Control System - Forced Idle
P2105 Throttle Actuator Control System - Forced Engine Shutdown
P2106 Throttle Actuator Control System - Forced Limited Power
P2107 Throttle Actuator Control Module Processor
P2108 Throttle Actuator Control Module Performance
P2109 Throttle/Pedal Position Sensor "A" Minimum Stop Performance
P2110 Throttle Actuator Control System - Forced Limited RPM
P2111 Throttle Actuator Control System - Stuck Open
P2112 Throttle Actuator Control System - Stuck Closed
P2113 Throttle/Pedal Position Sensor "B" Minimum Stop Performance
P2114 Throttle/Pedal Position Sensor "C" Minimum Stop Performance
P2115 Throttle/Pedal Position Sensor "D" Minimum Stop Performance
P2116 Throttle/Pedal Position Sensor "E" Minimum Stop Performance
P2117 Throttle/Pedal Position Sensor "F" Minimum Stop Performance
P2118 Throttle Actuator Control Motor Current Range/Performance
P2119 Throttle Actuator Control Throttle Body Range/Performance
P2120 Throttle/Pedal Position Sensor/Switch "D" Circuit
P2121 Throttle/Pedal Position Sensor/Switch "D" Circuit Range/Performance
P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input
P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input
P2124 Throttle/Pedal Position Sensor/Switch "D" Circuit Intermittent
P2125 Throttle/Pedal Position Sensor/Switch "E" Circuit
P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit Range/Performance
P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input
P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input
P2129 Throttle/Pedal Position Sensor/Switch "E" Circuit Intermittent
P2130 Throttle/Pedal Position Sensor/Switch "F" Circuit
P2131 Throttle/Pedal Position Sensor/Switch "F" Circuit Range Performance
P2132 Throttle/Pedal Position Sensor/Switch "F" Circuit Low Input
P2133 Throttle/Pedal Position Sensor/Switch "F" Circuit High Input
P2134 Throttle/Pedal Position Sensor/Switch "F" Circuit Intermittent
P2135 Throttle/Pedal Position Sensor/Switch "A" / "B" Voltage Correlation
P2136 Throttle/Pedal Position Sensor/Switch "A" / "C" Voltage Correlation
P2137 Throttle/Pedal Position Sensor/Switch "B" / "C" Voltage Correlation
P2138 Throttle/Pedal Position Sensor/Switch "D" / "E" Voltage Correlation
P2139 Throttle/Pedal Position Sensor/Switch "D" / "F" Voltage Correlation
P2140 Throttle/Pedal Position Sensor/Switch "E" / "F" Voltage Correlation
P2141 Exhaust Gas Recirculation Throttle Control Circuit Low
P2142 Exhaust Gas Recirculation Throttle Control Circuit High
P2143 Exhaust Gas Recirculation Vent Control Circuit/Open

P2144 Exhaust Gas Recirculation Vent Control Circuit Low
P2145 Exhaust Gas Recirculation Vent Control Circuit High
P2146 Fuel Injector Group "A" Supply Voltage Circuit/Open
P2147 Fuel Injector Group "A" Supply Voltage Circuit Low
P2148 Fuel Injector Group "A" Supply Voltage Circuit High
P2149 Fuel Injector Group "B" Supply Voltage Circuit/Open
P2150 Fuel Injector Group "B" Supply Voltage Circuit Low
P2151 Fuel Injector Group "B" Supply Voltage Circuit High
P2152 Fuel Injector Group "C" Supply Voltage Circuit/Open
P2153 Fuel Injector Group "C" Supply Voltage Circuit Low
P2154 Fuel Injector Group "C" Supply Voltage Circuit High
P2155 Fuel Injector Group "D" Supply Voltage Circuit/Open
P2156 Fuel Injector Group "D" Supply Voltage Circuit Low
P2157 Fuel Injector Group "D" Supply Voltage Circuit High
P2158 Vehicle Speed Sensor "B"
P2159 Vehicle Speed Sensor "B" Range/Performance
P2160 Vehicle Speed Sensor "B" Circuit Low
P2161 Vehicle Speed Sensor "B" Intermittent/Erratic
P2162 Vehicle Speed Sensor "A" / "B" Correlation
P2163 Throttle/Pedal Position Sensor "A" Maximum Stop Performance
P2164 Throttle/Pedal Position Sensor "B" Maximum Stop Performance
P2165 Throttle/Pedal Position Sensor "C" Maximum Stop Performance
P2166 Throttle/Pedal Position Sensor "D" Maximum Stop Performance
P2167 Throttle/Pedal Position Sensor "E" Maximum Stop Performance
P2168 Throttle/Pedal Position Sensor "F" Maximum Stop Performance
P2169 Exhaust Pressure Regulator Vent Solenoid Control Circuit/Open
P2170 Exhaust Pressure Regulator Vent Solenoid Control Circuit Low
P2171 Exhaust Pressure Regulator Vent Solenoid Control Circuit High
P2172 Throttle Actuator Control System - Sudden High Airflow Detected
P2173 Throttle Actuator Control System - High Airflow Detected
P2174 Throttle Actuator Control System - Sudden Low Airflow Detected
P2175 Throttle Actuator Control System - Low Airflow Detected
P2176 Throttle Actuator Control System - Idle Position Not Learned
P2177 System Too Lean Off Idle
P2178 System Too Rich Off Idle
P2179 System Too Lean Off Idle
P2180 System Too Rich Off Idle
P2181 Cooling System Performance
P2182 Engine Coolant Temperature Sensor 2 Circuit
P2183 Engine Coolant Temperature Sensor 2 Circuit Range/Performance
P2184 Engine Coolant Temperature Sensor 2 Circuit Low
P2185 Engine Coolant Temperature Sensor 2 Circuit High
P2186 Engine Coolant Temperature Sensor 2 Circuit Intermittent/Erratic
P2187 System Too Lean at Idle
P2188 System Too Rich at Idle
P2189 System Too Lean at Idle
P2190 System Too Rich at Idle
P2191 System Too Lean at Higher Load
P2192 System Too Rich at Higher Load
P2193 System Too Lean at Higher Load
P2194 System Too Rich at Higher Load

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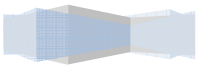
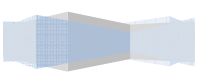


P2195 O2 Sensor Signal Stuck Lean
P2196 O2 Sensor Signal Stuck Rich
P2197 O2 Sensor Signal Stuck Lean
P2198 O2 Sensor Signal Stuck Rich
P2199 Intake Air Temperature Sensor 1 / 2 Correlation

P22XX Fuel and Air Metering

P2200 NOx Sensor Circuit
P2201 NOx Sensor Circuit Range/Performance
P2202 NOx Sensor Circuit Low Input
P2203 NOx Sensor Circuit High Input
P2204 NOx Sensor Circuit Intermittent Input
P2205 NOx Sensor Heater Control Circuit/Open
P2206 NOx Sensor Heater Control Circuit Low
P2207 NOx Sensor Heater Control Circuit High
P2208 NOx Sensor Heater Sense Circuit
P2209 NOx Sensor Heater Sense Circuit Range/Performance
P2210 NOx Sensor Heater Sense Circuit Low Input
P2211 NOx Sensor Heater Sense Circuit High Input
P2212 NOx Sensor Heater Sense Circuit Intermittent
P2213 NOx Sensor Circuit
P2214 NOx Sensor Circuit Range/Performance
P2215 NOx Sensor Circuit Low Input
P2216 NOx Sensor Circuit High Input
P2217 NOx Sensor Circuit Intermittent Input
P2218 NOx Sensor Heater Control Circuit/Open
P2219 NOx Sensor Heater Control Circuit Low
P2220 NOx Sensor Heater Control Circuit High
P2221 NOx Sensor Heater Sense Circuit
P2222 NOx Sensor Heater Sense Circuit Range/Performance
P2223 NOx Sensor Heater Sense Circuit Low
P2224 NOx Sensor Heater Sense Circuit High
P2225 NOx Sensor Heater Sense Circuit Intermittent
P2226 Barometric Pressure Circuit
P2227 Barometric Pressure Circuit Range/Performance
P2228 Barometric Pressure Circuit Low
P2229 Barometric Pressure Circuit High
P2230 Barometric Pressure Circuit Intermittent
P2231 O2 Sensor Signal Circuit Shorted to Heater Circuit
P2232 O2 Sensor Signal Circuit Shorted to Heater Circuit
P2233 O2 Sensor Signal Circuit Shorted to Heater Circuit
P2234 O2 Sensor Signal Circuit Shorted to Heater Circuit
P2235 O2 Sensor Signal Circuit Shorted to Heater Circuit
P2236 O2 Sensor Signal Circuit Shorted to Heater Circuit
P2237 O2 Sensor Positive Current Control Circuit/Open
P2238 O2 Sensor Positive Current Control Circuit Low
P2239 O2 Sensor Positive Current Control Circuit High
P2240 O2 Sensor Positive Current Control Circuit/Open
P2241 O2 Sensor Positive Current Control Circuit Low
P2242 O2 Sensor Positive Current Control Circuit High



P2243 O2 Sensor Reference Voltage Circuit/Open
P2244 O2 Sensor Reference Voltage Performance
P2245 O2 Sensor Reference Voltage Circuit Low
P2246 O2 Sensor Reference Voltage Circuit High
P2247 O2 Sensor Reference Voltage Circuit/Open
P2248 O2 Sensor Reference Voltage Performance
P2249 O2 Sensor Reference Voltage Circuit Low
P2250 O2 Sensor Reference Voltage Circuit High
P2251 O2 Sensor Negative Current Control Circuit/Open
P2252 O2 Sensor Negative Current Control Circuit Low
P2253 O2 Sensor Negative Current Control Circuit High
P2254 O2 Sensor Negative Current Control Circuit/Open
P2255 O2 Sensor Negative Current Control Circuit Low
P2256 O2 Sensor Negative Current Control Circuit High
P2257 Secondary Air Injection System Control "A" Circuit Low
P2258 Secondary Air Injection System Control "A" Circuit High
P2259 Secondary Air Injection System Control "B" Circuit Low
P2260 Secondary Air Injection System Control "B" Circuit High
P2261 Turbo/Super Charger Bypass Valve - Mechanical
P2262 Turbo Boost Pressure Not Detected - Mechanical
P2263 Turbo/Super Charger Boost System Performance
P2264 Water in Fuel Sensor Circuit
P2265 Water in Fuel Sensor Circuit Range/Performance
P2266 Water in Fuel Sensor Circuit Low
P2267 Water in Fuel Sensor Circuit High
P2268 Water in Fuel Sensor Circuit Intermittent
P2269 Water in Fuel Condition
P2270 O2 Sensor Signal Stuck Lean
P2271 O2 Sensor Signal Stuck Rich
P2272 O2 Sensor Signal Stuck Lean
P2273 O2 Sensor Signal Stuck Rich
P2274 O2 Sensor Signal Stuck Lean
P2275 O2 Sensor Signal Stuck Rich
P2276 O2 Sensor Signal Stuck Lean
P2277 O2 Sensor Signal Stuck Rich
P2278 O2 Sensor Signals Swapped Bank 1 Sensor 3 / Bank 2 Sensor 3
P2279 Intake Air System Leak
P2280 Air Flow Restriction / Air Leak between Air Filter and MAF
P2281 Air Leak between MAF and Throttle Body
P2282 Air Leak between Throttle Body and Intake Valves
P2283 Injector Control Pressure Sensor Circuit
P2284 Injector Control Pressure Sensor Circuit Range/Performance
P2285 Injector Control Pressure Sensor Circuit Low
P2286 Injector Control Pressure Sensor Circuit High
P2287 Injector Control Pressure Sensor Circuit Intermittent
P2288 Injector Control Pressure Too High
P2289 Injector Control Pressure Too High - Engine Off
P2290 Injector Control Pressure Too Low
P2291 Injector Control Pressure Too Low - Engine Cranking
P2292 Injector Control Pressure Erratic
P2293 Fuel Pressure Regulator 2 Performance

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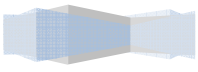

P2294 Fuel Pressure Regulator 2 Control Circuit
P2295 Fuel Pressure Regulator 2 Control Circuit Low
P2296 Fuel Pressure Regulator 2 Control Circuit High
P2297 O2 Sensor Out of Range during Deceleration
P2298 O2 Sensor Out of Range during Deceleration
P2299 Brake Pedal Position / Accelerator Pedal Position Incompatible

P23XX Ignition System and Misfire

P2300 Ignition Coil "A" Primary Control Circuit Low
P2301 Ignition Coil "A" Primary Control Circuit High
P2302 Ignition Coil "A" Secondary Circuit
P2303 Ignition Coil "B" Primary Control Circuit Low
P2304 Ignition Coil "B" Primary Control Circuit High
P2305 Ignition Coil "B" Secondary Circuit
P2306 Ignition Coil "C" Primary Control Circuit Low
P2307 Ignition Coil "C" Primary Control Circuit High
P2308 Ignition Coil "C" Secondary Circuit
P2309 Ignition Coil "D" Primary Control Circuit Low
P2310 Ignition Coil "D" Primary Control Circuit High
P2311 Ignition Coil "D" Secondary Circuit
P2312 Ignition Coil "E" Primary Control Circuit Low
P2313 Ignition Coil "E" Primary Control Circuit High
P2314 Ignition Coil "E" Secondary Circuit
P2315 Ignition Coil "F" Primary Control Circuit Low
P2316 Ignition Coil "F" Primary Control Circuit High
P2317 Ignition Coil "F" Secondary Circuit
P2318 Ignition Coil "G" Primary Control Circuit Low
P2319 Ignition Coil "G" Primary Control Circuit High
P2320 Ignition Coil "G" Secondary Circuit
P2321 Ignition Coil "H" Primary Control Circuit Low
P2322 Ignition Coil "H" Primary Control Circuit High
P2323 Ignition Coil "H" Secondary Circuit
P2324 Ignition Coil "I" Primary Control Circuit Low
P2325 Ignition Coil "I" Primary Control Circuit High
P2326 Ignition Coil "I" Secondary Circuit
P2327 Ignition Coil "J" Primary Control Circuit Low
P2328 Ignition Coil "J" Primary Control Circuit High
P2329 Ignition Coil "J" Secondary Circuit
P2330 Ignition Coil "K" Primary Control Circuit Low
P2331 Ignition Coil "K" Primary Control Circuit High
P2332 Ignition Coil "K" Secondary Circuit
P2333 Ignition Coil "L" Primary Control Circuit Low
P2334 Ignition Coil "L" Primary Control Circuit High
P2335 Ignition Coil "L" Secondary Circuit
P2336 Cylinder #1 above Knock Threshold
P2337 Cylinder #2 above Knock Threshold
P2338 Cylinder #3 above Knock Threshold
P2339 Cylinder #4 above Knock Threshold
P2340 Cylinder #5 above Knock Threshold
P2341 Cylinder #6 above Knock Threshold

P2342 Cylinder #7 above Knock Threshold
P2343 Cylinder #8 above Knock Threshold
P2344 Cylinder #9 above Knock Threshold
P2345 Cylinder #10 above Knock Threshold
P2346 Cylinder #11 above Knock Threshold
P2347 Cylinder #12 above Knock Threshold

P24XX Auxiliary Emission Control System

P2400 Evaporative Emission System Leak Detection Pump Control Circuit/Open
P2401 Evaporative Emission System Leak Detection Pump Control Circuit Low
P2402 Evaporative Emission System Leak Detection Pump Control Circuit High
P2403 Evaporative Emission System Leak Detection Pump Sense Circuit/Open
P2404 Evaporative Emission System Leak Detection Pump Sense Circuit Range/Performance
P2405 Evaporative Emission System Leak Detection Pump Sense Circuit Low
P2406 Evaporative Emission System Leak Detection Pump Sense Circuit High
P2407 Evaporative Emission System Leak Detection Pump Sense Circuit Intermittent/Erratic
P2408 Fuel Cap Sensor/Switch Circuit
P2409 Fuel Cap Sensor/Switch Circuit Range/Performance
P2410 Fuel Cap Sensor/Switch Circuit Low
P2411 Fuel Cap Sensor/Switch Circuit High
P2412 Fuel Cap Sensor/Switch Circuit Intermittent/Erratic
P2413 Exhaust Gas Recirculation System Performance
P2414 O2 Sensor Exhaust Sample Error
P2415 O2 Sensor Exhaust Sample Error
P2416 O2 Sensor Signals Swapped Bank 1 Sensor 2 / Bank 1 Sensor 3
P2417 O2 Sensor Signals Swapped Bank 2 Sensor 2 / Bank 2 Sensor 3
P2418 Evaporative Emission System Switching Valve Control Circuit / Open
P2419 Evaporative Emission System Switching Valve Control Circuit Low
P2420 Evaporative Emission System Switching Valve Control Circuit High
P2421 Evaporative Emission System Vent Valve Stuck Open
P2422 Evaporative Emission System Vent Valve Stuck Closed
P2423 HC Adsorption Catalyst Efficiency Below Threshold
P2424 HC Adsorption Catalyst Efficiency Below Threshold
P2425 Exhaust Gas Recirculation Cooling Valve Control Circuit/Open
P2426 Exhaust Gas Recirculation Cooling Valve Control Circuit Low
P2427 Exhaust Gas Recirculation Cooling Valve Control Circuit High
P2428 Exhaust Gas Temperature Too High
P2429 Exhaust Gas Temperature Too High
P2430 Secondary Air Injection System Air Flow/Pressure Sensor Circuit
P2431 Secondary Air Injection System Air Flow/Pressure Sensor Circuit Range/Performance
P2432 Secondary Air Injection System Air Flow/Pressure Sensor Circuit Low
P2433 Secondary Air Injection System Air Flow/Pressure Sensor Circuit High
P2434 Secondary Air Injection System Air Flow/Pressure Sensor Circuit Intermittent/Erratic
P2435 Secondary Air Injection System Air Flow/Pressure Sensor Circuit
P2436 Secondary Air Injection System Air Flow/Pressure Sensor Circuit Range/Performance

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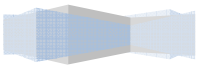

P2437 Secondary Air Injection System Air Flow/Pressure Sensor Circuit Low
P2438 Secondary Air Injection System Air Flow/Pressure Sensor Circuit High
P2439 Secondary Air Injection System Air Flow/Pressure Sensor Circuit Intermittent/Erratic
P2440 Secondary Air Injection System Switching Valve Stuck Open
P2441 Secondary Air Injection System Switching Valve Stuck Closed
P2442 Secondary Air Injection System Switching Valve Stuck Open
P2443 Secondary Air Injection System Switching Valve Stuck Closed
P2444 Secondary Air Injection System Pump Stuck On
P2445 Secondary Air Injection System Pump Stuck Off
P2446 Secondary Air Injection System Pump Stuck On
P2447 Secondary Air Injection System Pump Stuck Off

P25XX Vehicle Speed Control and Idle Control System

P2500 Generator Lamp/L-Terminal Circuit Low
P2501 Generator Lamp/L-Terminal Circuit High
P2502 Charging System Voltage
P2503 Charging System Voltage Low
P2504 Charging System Voltage High
P2505 ECM/PCM Power Input Signal
P2506 ECM/PCM Power Input Signal Range/Performance
P2507 ECM/PCM Power Input Signal Low
P2508 ECM/PCM Power Input Signal High
P2509 ECM/PCM Power Input Signal Intermittent
P2510 ECM/PCM Power Relay Sense Circuit Range/Performance
P2511 ECM/PCM Power Relay Sense Circuit Intermittent
P2512 Event Data Recorder Request Circuit/ Open
P2513 Event Data Recorder Request Circuit Low
P2514 Event Data Recorder Request Circuit High
P2515 A/C Refrigerant Pressure Sensor "B" Circuit
P2516 A/C Refrigerant Pressure Sensor "B" Circuit Range/Performance
P2517 A/C Refrigerant Pressure Sensor "B" Circuit Low
P2518 A/C Refrigerant Pressure Sensor "B" Circuit High
P2519 A/C Request "A" Circuit
P2520 A/C Request "A" Circuit Low
P2521 A/C Request "A" Circuit High
P2522 A/C Request "B" Circuit
P2523 A/C Request "B" Circuit Low
P2524 A/C Request "B" Circuit High
P2525 Vacuum Reservoir Pressure Sensor Circuit
P2526 Vacuum Reservoir Pressure Sensor Circuit Range/Performance
P2527 Vacuum Reservoir Pressure Sensor Circuit Low
P2528 Vacuum Reservoir Pressure Sensor Circuit High
P2529 Vacuum Reservoir Pressure Sensor Circuit Intermittent
P2530 Ignition Switch Run Position Circuit
P2531 Ignition Switch Run Position Circuit Low
P2532 Ignition Switch Run Position Circuit High
P2533 Ignition Switch Run/Start Position Circuit
P2534 Ignition Switch Run/Start Position Circuit Low
P2535 Ignition Switch Run/Start Position Circuit High

P2536 Ignition Switch Accessory Position Circuit
P2537 Ignition Switch Accessory Position Circuit Low
P2538 Ignition Switch Accessory Position Circuit High
P2539 Low Pressure Fuel System Sensor Circuit
P2540 Low Pressure Fuel System Sensor Circuit Range/Performance
P2541 Low Pressure Fuel System Sensor Circuit Low
P2542 Low Pressure Fuel System Sensor Circuit High
P2543 Low Pressure Fuel System Sensor Circuit Intermittent
P2544 Torque Management Request Input Signal "A"
P2545 Torque Management Request Input Signal "A" Range/Performance
P2546 Torque Management Request Input Signal "A" Low
P2547 Torque Management Request Input Signal "A" High
P2548 Torque Management Request Input Signal "B"
P2549 Torque Management Request Input Signal "B" Range/Performance
P2550 Torque Management Request Input Signal "B" Low
P2551 Torque Management Request Input Signal "B" High
P2552 Throttle/Fuel Inhibit Circuit
P2553 Throttle/Fuel Inhibit Circuit Range/Performance
P2554 Throttle/Fuel Inhibit Circuit Low
P2555 Throttle/Fuel Inhibit Circuit High
P2556 Engine Coolant Level Sensor/Switch Circuit
P2557 Engine Coolant Level Sensor/Switch Circuit Range/Performance
P2558 Engine Coolant Level Sensor/Switch Circuit Low
P2559 Engine Coolant Level Sensor/Switch Circuit High
P2560 Engine Coolant Level Low
P2561 A/C Control Module Requested MIL Illumination
P2562 Turbocharger Boost Control Position Sensor Circuit
P2563 Turbocharger Boost Control Position Sensor Circuit Range/Performance
P2564 Turbocharger Boost Control Position Sensor Circuit Low
P2565 Turbocharger Boost Control Position Sensor Circuit High
P2566 Turbocharger Boost Control Position Sensor Circuit Intermittent
P2567 Direct Ozone Reduction Catalyst Temperature Sensor Circuit
P2568 Direct Ozone Reduction Catalyst Temperature Sensor Circuit Range/Performance
P2569 Direct Ozone Reduction Catalyst Temperature Sensor Circuit Low
P2570 Direct Ozone Reduction Catalyst Temperature Sensor Circuit High
P2571 Direct Ozone Reduction Catalyst Temperature Sensor Circuit Intermittent/Erratic
P2572 Direct Ozone Reduction Catalyst Deterioration Sensor Circuit
P2573 Direct Ozone Reduction Catalyst Deterioration Sensor Circuit Range/Performance
P2574 Direct Ozone Reduction Catalyst Deterioration Sensor Circuit Low
P2575 Direct Ozone Reduction Catalyst Deterioration Sensor Circuit High
P2576 Direct Ozone Reduction Catalyst Deterioration Sensor Circuit Intermittent/Erratic
P2577 Direct Ozone Reduction Catalyst Efficiency Below Threshold

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P26XX Computer Output Circuit

P2600 Coolant Pump Control Circuit/Open
P2601 Coolant Pump Control Circuit Range/Performance

P2602 Coolant Pump Control Circuit Low
P2603 Coolant Pump Control Circuit High
P2604 Intake Air Heater "A" Circuit Range/Performance
P2605 Intake Air Heater "A" Circuit/Open
P2606 Intake Air Heater "B" Circuit Range/Performance
P2607 Intake Air Heater "B" Circuit Low
P2608 Intake Air Heater "B" Circuit High
P2609 Intake Air Heater System Performance
P2610 ECM/PCM Internal Engine Off Timer Performance
P2611 A/C Refrigerant Distribution Valve Control Circuit/Open
P2612 A/C Refrigerant Distribution Valve Control Circuit Low
P2613 A/C Refrigerant Distribution Valve Control Circuit High
P2614 Camshaft Position Signal Output Circuit/Open
P2615 Camshaft Position Signal Output Circuit Low
P2616 Camshaft Position Signal Output Circuit High
P2617 Crankshaft Position Signal Output Circuit/Open
P2618 Crankshaft Position Signal Output Circuit Low
P2619 Crankshaft Position Signal Output Circuit High
P2620 Throttle Position Output Circuit/Open
P2621 Throttle Position Output Circuit Low
P2622 Throttle Position Output Circuit High
P2623 Injector Control Pressure Regulator Circuit/Open
P2624 Injector Control Pressure Regulator Circuit Low
P2625 Injector Control Pressure Regulator Circuit High
P2626 O2 Sensor Pumping Current Trim Circuit/Open
P2627 O2 Sensor Pumping Current Trim Circuit Low
P2628 O2 Sensor Pumping Current Trim Circuit High
P2629 O2 Sensor Pumping Current Trim Circuit/Open
P2630 O2 Sensor Pumping Current Trim Circuit Low
P2631 O2 Sensor Pumping Current Trim Circuit High
P2632 Fuel Pump "B" Control Circuit /Open
P2633 Fuel Pump "B" Control Circuit Low
P2634 Fuel Pump "B" Control Circuit High
P2635 Fuel Pump "A" Low Flow / Performance
P2636 Fuel Pump "B" Low Flow / Performance
P2637 Torque Management Feedback Signal "A"
P2638 Torque Management Feedback Signal "A" Range/Performance
P2639 Torque Management Feedback Signal "A" Low
P2640 Torque Management Feedback Signal "A" High
P2641 Torque Management Feedback Signal "B"
P2642 Torque Management Feedback Signal "B" Range/Performance
P2643 Torque Management Feedback Signal "B" Low
P2644 Torque Management Feedback Signal "B" High
P2645 "A" Rocker Arm Actuator Control Circuit/Open
P2646 "A" Rocker Arm Actuator System Performance or Stuck Off
P2647 "A" Rocker Arm Actuator System Stuck On
P2648 "A" Rocker Arm Actuator Control Circuit Low
P2649 "A" Rocker Arm Actuator Control Circuit High
P2650 "B" Rocker Arm Actuator Control Circuit/Open
P2651 "B" Rocker Arm Actuator System Performance or Stuck Off
P2652 "B" Rocker Arm Actuator System Stuck On

P2653 "B" Rocker Arm Actuator Control Circuit Low
P2654 "B" Rocker Arm Actuator Control Circuit High
P2655 "A" Rocker Arm Actuator Control Circuit/Open
P2656 "A" Rocker Arm Actuator System Performance or Stuck Off
P2657 "A" Rocker Arm Actuator System Stuck On
P2658 "A" Rocker Arm Actuator Control Circuit Low
P2659 "A" Rocker Arm Actuator Control Circuit High
P2660 "B" Rocker Arm Actuator Control Circuit/Open
P2661 "B" Rocker Arm Actuator System Performance or Stuck Off
P2662 "B" Rocker Arm Actuator System Stuck On
P2663 "B" Rocker Arm Actuator Control Circuit Low
P2664 "B" Rocker Arm Actuator Control Circuit High
P2665 Fuel Shutoff Valve "B" Control Circuit/Open
P2666 Fuel Shutoff Valve "B" Control Circuit Low
P2667 Fuel Shutoff Valve "B" Control Circuit High
P2668 Fuel Mode Indicator Lamp Control Circuit
P2669 Actuator Supply Voltage "B" Circuit /Open
P2670 Actuator Supply Voltage "B" Circuit Low
P2671 Actuator Supply Voltage "B" Circuit High

P27XX Transmission

P2700 Transmission Friction Element "A" Apply Time Range/Performance
P2701 Transmission Friction Element "B" Apply Time Range/Performance
P2702 Transmission Friction Element "C" Apply Time Range/Performance
P2703 Transmission Friction Element "D" Apply Time Range/Performance
P2704 Transmission Friction Element "E" Apply Time Range/Performance
P2705 Transmission Friction Element "F" Apply Time Range/Performance
P2706 Shift Solenoid "F"
P2707 Shift Solenoid "F" Performance or Stuck Off
P2708 Shift Solenoid "F" Stuck On
P2709 Shift Solenoid "F" Electrical
P2710 Shift Solenoid "F" Intermittent
P2711 Unexpected Mechanical Gear Disengagement
P2712 Hydraulic Power Unit Leakage
P2713 Pressure Control Solenoid "D"
P2714 Pressure Control Solenoid "D" Performance or Stuck Off
P2715 Pressure Control Solenoid "D" Stuck On
P2716 Pressure Control Solenoid "D" Electrical
P2717 Pressure Control Solenoid "D" Intermittent
P2718 Pressure Control Solenoid "D" Control Circuit / Open
P2719 Pressure Control Solenoid "D" Control Circuit Range/Performance
P2720 Pressure Control Solenoid "D" Control Circuit Low
P2721 Pressure Control Solenoid "D" Control Circuit High
P2722 Pressure Control Solenoid "E"
P2723 Pressure Control Solenoid "E" Performance or Stuck Off
P2724 Pressure Control Solenoid "E" Stuck On
P2725 Pressure Control Solenoid "E" Electrical
P2726 Pressure Control Solenoid "E" Intermittent
P2727 Pressure Control Solenoid "E" Control Circuit / Open
P2728 Pressure Control Solenoid "E" Control Circuit Range/Performance

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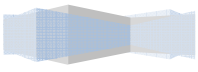
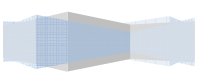


P2729 Pressure Control Solenoid "E" Control Circuit Low
P2730 Pressure Control Solenoid "E" Control Circuit High
P2731 Pressure Control Solenoid "F"
P2732 Pressure Control Solenoid "F" Performance or Stuck Off
P2733 Pressure Control Solenoid "F" Stuck On
P2734 Pressure Control Solenoid "F" Electrical
P2735 Pressure Control Solenoid "F" Intermittent
P2736 Pressure Control Solenoid "F" Control Circuit/Open
P2737 Pressure Control Solenoid "F" Control Circuit Range/Performance
P2738 Pressure Control Solenoid "F" Control Circuit Low
P2739 Pressure Control Solenoid "F" Control Circuit High
P2740 Transmission Fluid Temperature Sensor "B" Circuit"
P2741 Transmission Fluid Temperature Sensor "B" Circuit Range Performance
P2742 Transmission Fluid Temperature Sensor "B" Circuit Low
P2743 Transmission Fluid Temperature Sensor "B" Circuit High
P2744 Transmission Fluid Temperature Sensor "B" Circuit Intermittent
P2745 Intermediate Shaft Speed Sensor "B" Circuit
P2746 Intermediate Shaft Speed Sensor "B" Circuit Range/Performance
P2747 Intermediate Shaft Speed Sensor "B" Circuit No Signal
P2748 Intermediate Shaft Speed Sensor "B" Circuit Intermittent
P2749 Intermediate Shaft Speed Sensor "C" Circuit
P2750 Intermediate Shaft Speed Sensor "C" Circuit Range/Performance
P2751 Intermediate Shaft Speed Sensor "C" Circuit No Signal
P2752 Intermediate Shaft Speed Sensor "C" Circuit Intermittent
P2753 Transmission Fluid Cooler Control Circuit/Open
P2754 Transmission Fluid Cooler Control Circuit Low
P2755 Transmission Fluid Cooler Control Circuit High
P2756 Torque Converter Clutch Pressure Control Solenoid
P2757 Torque Converter Clutch Pressure Control Solenoid Control Circuit Performance or Stuck Off
P2758 Torque Converter Clutch Pressure Control Solenoid Control Circuit Stuck On
P2759 Torque Converter Clutch Pressure Control Solenoid Control Circuit Electrical
P2760 Torque Converter Clutch Pressure Control Solenoid Control Circuit Intermittent
P2761 Torque Converter Clutch Pressure Control Solenoid Control Circuit/Open
P2762 Torque Converter Clutch Pressure Control Solenoid Control Circuit Range/Performance
P2763 Torque Converter Clutch Pressure Control Solenoid Control Circuit High
P2764 Torque Converter Clutch Pressure Control Solenoid Control Circuit Low
P2765 Input/Turbine Speed Sensor "B" Circuit
P2766 Input/Turbine Speed Sensor "B" Circuit Range/Performance
P2767 Input/Turbine Speed Sensor "B" Circuit No Signal
P2768 Input/Turbine Speed Sensor "B" Circuit Intermittent
P2769 Torque Converter Clutch Circuit Low
P2770 Torque Converter Clutch Circuit High
P2771 Four Wheel Drive (4WD) Low Switch Circuit
P2772 Four Wheel Drive (4WD) Low Switch Circuit Range/Performance
P2773 Four Wheel Drive (4WD) Low Switch Circuit Low
P2774 Four Wheel Drive (4WD) Low Switch Circuit High
P2775 Upshift Switch Circuit Range/Performance
P2776 Upshift Switch Circuit Low
P2777 Upshift Switch Circuit High



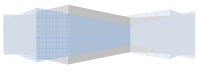
P2778 Upshift Switch Circuit Intermittent/Erratic
P2779 Downshift Switch Circuit Range/Performance
P2780 Downshift Switch Circuit Low
P2781 Downshift Switch Circuit High
P2782 Downshift Switch Circuit Intermittent/Erratic
P2783 Torque Converter Temperature Too High
P2784 Input/Turbine Speed Sensor "A"/"B" Correlation
P2785 Clutch Actuator Temperature Too High
P2786 Gear Shift Actuator Temperature Too High
P2787 Clutch Temperature Too High
P2788 Auto Shift Manual Adaptive Learning at Limit
P2789 Clutch Adaptive Learning at Limit
P2790 Gate Select Direction Circuit
P2791 Gate Select Direction Circuit Low
P2792 Gate Select Direction Circuit High
P2793 Gear Shift Direction Circuit
P2794 Gear Shift Direction Circuit Low
P2795 Gear Shift Direction Circuit High

P2AXX Hybrid Propulsion

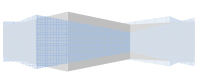
P2A00 O2 Sensor Circuit Range/Performance
P2A01 O2 Sensor Circuit Range/Performance
P2A02 O2 Sensor Circuit Range/Performance
P2A03 O2 Sensor Circuit Range/Performance
P2A04 O2 Sensor Circuit Range/Performance
P2A05 O2 Sensor Circuit Range/Performance

P34XX Ignition Systems

P3400 Cylinder Deactivation System
P3401 Cylinder 1 Deactivation/Intake Valve Control Circuit/Open
P3402 Cylinder 1 Deactivation/Intake Valve Control Performance
P3403 Cylinder 1 Deactivation/Intake Valve Control Circuit Low
P3404 Cylinder 1 Deactivation/Intake Valve Control Circuit High
P3405 Cylinder 1 Exhaust Valve Control Circuit/Open
P3406 Cylinder 1 Exhaust Valve Control Performance
P3407 Cylinder 1 Exhaust Valve Control Circuit Low
P3408 Cylinder 1 Exhaust Valve Control Circuit High
P3409 Cylinder 2 Deactivation/Intake Valve Control Circuit/Open
P3410 Cylinder 2 Deactivation/Intake Valve Control Performance
P3411 Cylinder 2 Deactivation/Intake Valve Control Circuit Low
P3412 Cylinder 2 Deactivation/Intake Valve Control Circuit High
P3413 Cylinder 2 Exhaust Valve Control Circuit/Open
P3414 Cylinder 2 Exhaust Valve Control Performance
P3415 Cylinder 2 Exhaust Valve Control Circuit Low
P3416 Cylinder 2 Exhaust Valve Control Circuit High
P3417 Cylinder 3 Deactivation/Intake Valve Control Circuit/Open
P3418 Cylinder 3 Deactivation/Intake Valve Control Performance
P3419 Cylinder 3 Deactivation/Intake Valve Control Circuit Low
P3420 Cylinder 3 Deactivation/Intake Valve Control Circuit High



P3421 Cylinder 3 Exhaust Valve Control Circuit/Open
P3422 Cylinder 3 Exhaust Valve Control Performance
P3423 Cylinder 3 Exhaust Valve Control Circuit Low
P3424 Cylinder 3 Exhaust Valve Control Circuit High
P3425 Cylinder 4 Deactivation/Intake Valve Control Circuit/Open
P3426 Cylinder 4 Deactivation/Intake Valve Control Performance
P3427 Cylinder 4 Deactivation/Intake Valve Control Circuit Low
P3428 Cylinder 4 Deactivation/Intake Valve Control Circuit High
P3429 Cylinder 4 Exhaust Valve Control Circuit/Open
P3430 Cylinder 4 Exhaust Valve Control Performance
P3431 Cylinder 4 Exhaust Valve Control Circuit Low
P3432 Cylinder 4 Exhaust Valve Control Circuit High
P3433 Cylinder 5 Deactivation/Intake Valve Control Circuit/Open
P3434 Cylinder 5 Deactivation/Intake Valve Control Performance
P3435 Cylinder 5 Deactivation/Intake Valve Control Circuit Low
P3436 Cylinder 5 Deactivation/Intake Valve Control Circuit High
P3437 Cylinder 5 Exhaust Valve Control Circuit/Open
P3438 Cylinder 5 Exhaust Valve Control Performance
P3439 Cylinder 5 Exhaust Valve Control Circuit Low
P3440 Cylinder 5 Exhaust Valve Control Circuit High
P3441 Cylinder 6 Deactivation/Intake Valve Control Circuit/Open
P3442 Cylinder 6 Deactivation/Intake Valve Control Performance
P3443 Cylinder 6 Deactivation/Intake Valve Control Circuit Low
P3444 Cylinder 6 Deactivation/Intake Valve Control Circuit High
P3445 Cylinder 6 Exhaust Valve Control Circuit/Open
P3446 Cylinder 6 Exhaust Valve Control Performance
P3447 Cylinder 6 Exhaust Valve Control Circuit Low
P3448 Cylinder 6 Exhaust Valve Control Circuit High
P3449 Cylinder 7 Deactivation/Intake Valve Control Circuit/Open
P3450 Cylinder 7 Deactivation/Intake Valve Control Performance
P3451 Cylinder 7 Deactivation/Intake Valve Control Circuit Low
P3452 Cylinder 7 Deactivation/Intake Valve Control Circuit High
P3453 Cylinder 7 Exhaust Valve Control Circuit/Open
P3454 Cylinder 7 Exhaust Valve Control Performance
P3455 Cylinder 7 Exhaust Valve Control Circuit Low
P3456 Cylinder 7 Exhaust Valve Control Circuit High
P3457 Cylinder 8 Deactivation/Intake Valve Control Circuit/Open
P3458 Cylinder 8 Deactivation/Intake Valve Control Performance
P3459 Cylinder 8 Deactivation/Intake Valve Control Circuit Low
P3460 Cylinder 8 Deactivation/Intake Valve Control Circuit High
P3461 Cylinder 8 Exhaust Valve Control Circuit/Open
P3462 Cylinder 8 Exhaust Valve Control Performance
P3463 Cylinder 8 Exhaust Valve Control Circuit Low
P3464 Cylinder 8 Exhaust Valve Control Circuit High
P3465 Cylinder 9 Deactivation/Intake Valve Control Circuit/Open
P3466 Cylinder 9 Deactivation/Intake Valve Control Performance
P3467 Cylinder 9 Deactivation/Intake Valve Control Circuit Low
P3468 Cylinder 9 Deactivation/Intake Valve Control Circuit High
P3469 Cylinder 9 Exhaust Valve Control Circuit/Open
P3470 Cylinder 9 Exhaust Valve Control Performance
P3471 Cylinder 9 Exhaust Valve Control Circuit Low



P3472 Cylinder 9 Exhaust Valve Control Circuit High
P3473 Cylinder 10 Deactivation/Intake Valve Control Circuit/Open
P3474 Cylinder 10 Deactivation/Intake Valve Control Performance
P3475 Cylinder 10 Deactivation/Intake Valve Control Circuit Low
P3476 Cylinder 10 Deactivation/Intake Valve Control Circuit High
P3477 Cylinder 10 Exhaust Valve Control Circuit/Open
P3478 Cylinder 10 Exhaust Valve Control Performance
P3479 Cylinder 10 Exhaust Valve Control Circuit Low
P3480 Cylinder 10 Exhaust Valve Control Circuit High
P3481 Cylinder 11 Deactivation/Intake Valve Control Circuit/Open
P3482 Cylinder 11 Deactivation/Intake Valve Control Performance
P3483 Cylinder 11 Deactivation/Intake Valve Control Circuit Low
P3484 Cylinder 11 Deactivation/Intake Valve Control Circuit High
P3485 Cylinder 11 Exhaust Valve Control Circuit/Open
P3486 Cylinder 11 Exhaust Valve Control Performance
P3487 Cylinder 11 Exhaust Valve Control Circuit Low
P3488 Cylinder 11 Exhaust Valve Control Circuit High
P3489 Cylinder 12 Deactivation/Intake Valve Control Circuit/Open
P3490 Cylinder 12 Deactivation/Intake Valve Control Performance
P3491 Cylinder 12 Deactivation/Intake Valve Control Circuit Low
P3492 Cylinder 12 Deactivation/Intake Valve Control Circuit High
P3493 Cylinder 12 Exhaust Valve Control Circuit/Open
P3494 Cylinder 12 Exhaust Valve Control Performance
P3495 Cylinder 12 Exhaust Valve Control Circuit Low
P3496 Cylinder 12 Exhaust Valve Control Circuit High
P3497 Cylinder Deactivation System

OBDII Generic - Body Trouble Codes (B0xxx, B3xxx)

(As of 2005, generic body codes have not been completely defined by auto-makers.)

B0XXX Body Codes

B0001 PCM Discrete Input Speed Signal Error
B0004 PCM Discrete Input Speed Signal Not Present
B0005 In Park Switch Circuit Malfunction
B0016 RF/Passenger Frontal Deployment Loop (Single Stage or Stage 1) Resistance Low
B0017 RF/Passenger Frontal Deployment Loop (Single Stage or Stage 1) Open
B0018 RF/Passenger Frontal Deployment Loop (Single Stage or Stage 1) Short to Ground/Voltage Out of Range
B0022 LF/Driver Frontal Deployment Loop (Single Stage or Stage 1) Resistance Low
B0024 LF/Driver Frontal Deployment Loop (Single Stage or Stage 1) Short to Ground /Voltage Out of Range
B0026 LF/Driver Frontal Deployment Loop (Single Stage or Stage 1) Open
B0028 RF/Passenger Side Deployment Loop Resistance Low
B0029 RF/Passenger Side Deployment Loop Open
B0030 RF/Passenger Side Deployment Loop Short to Ground/Voltage Out of Range
B0035 ADS Closed/Shorted to Ground
B0036 ADS Open/Missing/Shorted to Battery

B0037 AUX switch closed/shorted to ground
B0038 AUX switch open/shorted to battery
B0040 LF/Driver Side Deployment Loop Resistance Low
B0041 LF/Driver Side Deployment Loop Open
B0045 LF Side Deploy Loop Short to Ground/Voltage Out of Range
B0051 Deployment Commanded
B0053 Deployment Commanded with Loop Malfunctions Present
B0057 RF/Passenger Pretensioner Deployment Loop Resistance Low
B0058 RF/Passenger Pretensioner Deployment Loop Open
B0059 RF/Passenger Pretensioner Deployment Loop Short to Ground/Voltage Out of Range
B0064 LF/Driver Pretensioner Deployment Loop Resistance Low
B0065 LF/Driver Pretensioner Deployment Loop Open
B0066 LF/Driver Pretensioner Deployment Loop Short to Ground/Voltage Out of Range
B0073 Supplemental Deployment Loop #1 Resistance Low
B0074 Supplemental Deployment Loop #1 Open
B0075 Supplemental Deployment Loop #1 Short to Ground/Voltage Out of Range
B0077 LF/Driver SIS Malfunction
B0078 RF/Passenger SIS Malfunction
B0079 Incorrect LF/Driver SIS Installed
B0080 Discard LF/Driver SIS
B0081 Incorrect RF/Passenger SIS Installed
B0082 Discard RF/Passenger SIS
B0086 Supplemental Deployment Loop #2 Resistance Low
B0087 Supplemental Deployment Loop #2 Open
B0088 Supplemental Deployment Loop #2 Short to Ground/Voltage Out of Range
B0090 Active Switch Voltage Out of Range
B0091 Active Switch: Wrong State
B0092 PPS Passenger Detection Error
B0093 PPS/CPS Self-test Malfunction
B0094 CPS Child Seat Detection Error
B0095 SDM-PPS/CPS Mismatch Malfunction
B0126 Right Panel Discharge Temperature Fault
B0131 Right Heater Discharge Temperature Fault
B0159 Outside Air Temperature Sensor Circuit Range/Performance
B0164 Passenger Compartment Temperature Sensor #1 (Single Sensor or LH) Circuit Range/Performance
B0169 In-car Temp Sensor Failure (passenger -not used)
B0174 Output Air Temperature Sensor #1 (Upper; Single or LH) Circuit Range/ Performance
B0179 Output Air Temperature Sensor #2 (Lower; Single or LH) Circuit Range/ Performance
B0184 Solar Load Sensor #1 CKT Range
B0189 Solar Load Sensor #2 CKT Range
B0248 Mode Door Inoperative Error
B0249 Heater/Defrost/AC Door Range Error
B0268 A/I Door Inoperative Error
B0269 Air Inlet Door Range Error
B0408 Temperature Control #1 (Main/Front) Circuit Malfunction
B0409 Air Mix Door #1 Range Error

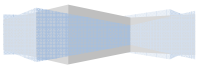
B0419 Air Mix Door #2 Range Error
B0423 Air Mix Door #2 Inoperative Error
B0428 Air Mix Door #3 Inoperative Error
B0429 Temperature Control #3 Rear Circuit Range/Performance
B0510 RH Panel Discharge Temp Sensor Failure
B0515 RH Heater Discharge Temp Sensor Failure
B0520 Rear Discharge Temp Sensor Failure
B0530 Fuel Level Sensor Stuck
B0532 Fuel Sensor Shorted To Ground
B0533 Fuel Sensor Open/Shorted To B+
B0688 Security System Indicator Circuit High
B0768 Service Indicator Circuit High
B0846 +5 Volt Reference Out of Range
B0856 Battery 2 Out of Range

OBD II Generic Chassis Trouble Codes (C0xxx, C3xxx)

(As of 2005, generic chassis codes have not been completely defined by auto-makers.)

C0XXX Chassis Codes

C0000 Vehicle Speed Information Circuit Malfunction
C0035 Left Front Wheel Speed Circuit Malfunction
C0040 Right Front Wheel Speed Circuit Malfunction
C0041 Right Front Wheel Speed Sensor Circuit Range/Performance (EBCM)
C0045 Left Rear Wheel Speed Circuit Malfunction
C0046 Left Rear Wheel Speed Sensor Circuit Range/Performance (EBCM)
C0050 Right Rear Wheel Speed Circuit Malfunction
C0051 LF Wheel Speed Sensor Circuit Range/Performance (EBCM)
C0060 Left Front ABS Solenoid #1 Circuit Malfunction
C0065 Left Front ABS Solenoid #2 Circuit Malfunction
C0070 Right Front ABS Solenoid #1 Circuit Malfunction
C0075 Right Front ABS Solenoid #2 Circuit Malfunction
C0080 Left Rear ABS Solenoid #1 Circuit Malfunction
C0085 Left Rear ABS Solenoid #2 Circuit Malfunction
C0090 Right Rear ABS Solenoid #1 Circuit Malfunction
C0095 Right Rear ABS Solenoid #2 Circuit Malfunction
C0110 Pump Motor Circuit Malfunction
C0121 Valve Relay Circuit Malfunction
C0128 Low Brake Fluid Circuit Low
C0141 Left TCS Solenoid #1 Circuit Malfunction
C0146 Left TCS Solenoid #2 Circuit Malfunction
C0151 Right TCS Solenoid #1 Circuit Malfunction
C0156 Right TCS Solenoid #2 Circuit Malfunction
C0161 ABS/TCS Brake Switch Circuit Malfunction
C0221 Right Front Wheel Speed Sensor Circuit Open
C0222 Right Front Wheel Speed Signal Missing
C0223 Right Front Wheel Speed Signal Erratic
C0225 Left Front Wheel Speed Sensor Circuit Open
C0226 Left Front Wheel Speed Signal Missing
C0227 Left Front Wheel Speed Signal Erratic



C0229 Drop Out of Front Wheel Speed Signals
C0235 Rear Wheel Speed Signal Circuit Open
C0236 Rear Wheel Speed Signal Circuit Missing
C0237 Rear Wheel Speed Signal Erratic
C0238 Wheel Speed Mismatch
C0241 EBCM Control Valve Circuit
C0245 Wheel Speed Sensor Frequency Error
C0254 EBCM Control Valve Circuit
C0265 EBCM Relay Circuit
C0266 EBCM Relay Circuit
C0267 Pump Motor Circuit Open/Shorted
C0268 Pump Motor Circuit Open/Shorted
C0269 Excessive Dump/Isolation Time
C0271 EBCM Malfunction
C0272 EBCM Malfunction
C0273 EBCM Malfunction
C0274 Excessive Dump/Isolation Time
C0279 Powertrain Configuration Not Valid
C0281 Brake Switch Circuit
C0283 Traction Switch Shorted to Ground
C0284 EBCM Malfunction
C0286 ABS Indicator Lamp Circuit Shorted to B+
C0287 Delivered Torque Circuit
C0288 Brake Warning Lamp Circuit Shorted to B+
C0290 Lost Communications With PCM
C0292 Lost Communications With PCM
C0291 Lost Communications With BCM
C0297 Powertrain Configuration Data Not Received
C0298 Powertrain Indicated Traction Control Malfunction
C0300 Rear Speed Sensor Malfunction
C0305 Front Speed Sensor Malfunction
C0306 Motor A or B Circuit
C0308 Motor A/B Circuit Low
C0309 Motor A/B Circuit High
C0310 Motor A/B Circuit Open
C0315 Motor Ground Circuit Open
C0321 Transfer Case Lock Circuit
C0323 T-Case Lock Circuit Low
C0324 T-Case Lock Circuit High
C0327 Encoder Circuit Malfunction
C0357 Park Switch Circuit High
C0359 Four Wheel Drive Low Range (4LO) Discrete Output Circuit
C0362 4LO Discrete Output Circuit High
C0367 Front Axle Control Circuit High
C0374 General System Malfunction
C0376 Front/Rear Shaft Speed Mismatch
C0379 Front Axle System
C0387 Unable to Perform Shift
C0472 Steering Hand wheel Speed Sensor Signal V Low
C0473 Steering Hand wheel Speed Sensor Signal V High
C0495 EVO Tracking Error

C0498 Steering Assist Control Actuator Feed Circuit Low
C0499 Steering Assist Control Solenoid Feed Circuit High
C0503 Steering Assist Control Solenoid Return Circuit Low
C0504 Steering Assist Control Solenoid Return Circuit High
C0550 ECU Malfunction - internal write / checksum malfunction
C0559 EEPROM Checksum Error
C0563 Calibration ROM Checksum Error
C0577 Left Front Solenoid Circuit Low
C0578 Left Front Solenoid Circuit High
C0579 Left Front Solenoid Circuit Open
C0582 Right Front Solenoid Circuit Low
C0583 Right Front Solenoid Circuit High
C0584 Right Front Solenoid Circuit Open
C0587 Left Rear Solenoid Circuit Low
C0588 Left Rear Solenoid Circuit High
C0589 Left Rear Solenoid Circuit Open
C0592 Right Rear Solenoid Circuit Low
C0593 Right Rear Solenoid Circuit High
C0594 Right Rear Solenoid Circuit Open
C0611 VIN Information Error
C0615 Left Front Position Sensor Malfunction
C0620 Right Front Position Sensor Malfunction
C0625 Left Rear Position Sensor Malfunction
C0628 Level Control Position Sensor Circuit High
C0630 Right Rear Position Sensor Malfunction
C0635 Left Front Normal Force Circuit Malfunction
C0638 Left Front Normal Force Circuit High
C0640 Right Front Normal Force Circuit Malfunction
C0643 Right Front Normal Force Circuit High
C0655 Level Control Compressor Relay Malfunction
C0657 Level Control Compressor Circuit Low
C0658 Level Control Compressor Circuit High
C0660 Level Control Exhaust Valve Circuit Malfunction
C0662 Level Control Exhaust Valve Circuit Low
C0663 Level Control Exhaust Valve Circuit High
C0665 Chassis Pitch Signal Circuit
C0690 Damper Control Relay Circuit Malfunction
C0691 Damper Control Relay Circuit Range
C0693 Damper Control Relay Circuit High
C0695 Position Sensor Over current (8 volt supply)
C0696 Position Sensor Over current (5 volt supply)
C0710 Steering Position Signal Malfunction
C0750 Tire Pressure Monitor (TPM) system sensor not transmitting
C0755 Tire Pressure Monitor (TPM) system sensor not transmitting
C0760 Tire Pressure Monitor (TPM) system sensor not transmitting
C0765 Tire Pressure Monitor (TPM) system sensor not transmitting
C0800 Device Power #1 Circuit Malfunction
C0896 Electronic Suspension Control (ESC) voltage is outside the normal range of 9 to 15.5 volts

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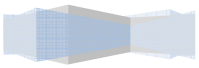
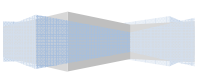


OBDII Generic Network Trouble Codes (U0xxx, U3xxx)

U0XXX Network Electrical

U0001 High Speed CAN Communication Bus
U0002 High Speed CAN Communication Bus Performance
U0003 High Speed CAN Communication Bus (+) Open
U0004 High Speed CAN Communication Bus (+) Low
U0005 High Speed CAN Communication Bus (+) High
U0006 High Speed CAN Communication Bus (-) Open
U0007 High Speed CAN Communication Bus (-) Low
U0008 High Speed CAN Communication Bus (-) High
U0009 High Speed CAN Communication Bus (-) shorted to Bus (+)
U0010 Medium Speed CAN Communication Bus
U0011 Medium Speed CAN Communication Bus Performance
U0012 Medium Speed CAN Communication Bus (+) Open
U0013 Medium Speed CAN Communication Bus (+) Low
U0014 Medium Speed CAN Communication Bus (+) High
U0015 Medium Speed CAN Communication Bus (-) Open
U0016 Medium Speed CAN Communication Bus (-) Low
U0017 Medium Speed CAN Communication Bus (-) High
U0018 Medium Speed CAN Communication Bus (-) shorted to Bus (+)
U0019 Low Speed CAN Communication Bus
U0020 Low Speed CAN Communication Bus Performance
U0021 Low Speed CAN Communication Bus (+) Open
U0022 Low Speed CAN Communication Bus (+) Low
U0023 Low Speed CAN Communication Bus (+) High
U0024 Low Speed CAN Communication Bus (-) Open
U0025 Low Speed CAN Communication Bus (-) Low
U0026 Low Speed CAN Communication Bus (-) High
U0027 Low Speed CAN Communication Bus (-) shorted to Bus (+)
U0028 Vehicle Communication Bus A
U0029 Vehicle Communication Bus A Performance
U0030 Vehicle Communication Bus A (+) Open
U0031 Vehicle Communication Bus A (+) Low
U0032 Vehicle Communication Bus A (+) High
U0033 Vehicle Communication Bus A (-) Open
U0034 Vehicle Communication Bus A (-) Low
U0035 Vehicle Communication Bus A (-) High
U0036 Vehicle Communication Bus A (-) shorted to Bus A (+)
U0037 Vehicle Communication Bus B
U0038 Vehicle Communication Bus B Performance
U0039 Vehicle Communication Bus B (+) Open
U0040 Vehicle Communication Bus B (+) Low
U0041 Vehicle Communication Bus B (+) High
U0042 Vehicle Communication Bus B (-) Open
U0043 Vehicle Communication Bus B (-) Low
U0044 Vehicle Communication Bus B (-) High
U0045 Vehicle Communication Bus B (-) shorted to Bus B (+)
U0046 Vehicle Communication Bus C



U0047 Vehicle Communication Bus C Performance
U0048 Vehicle Communication Bus C (+) Open
U0049 Vehicle Communication Bus C (+) Low
U0050 Vehicle Communication Bus C (+) High
U0051 Vehicle Communication Bus C (-) Open
U0052 Vehicle Communication Bus C (-) Low
U0053 Vehicle Communication Bus C (-) High
U0054 Vehicle Communication Bus C (-) shorted to Bus C (+)
U0055 Vehicle Communication Bus D
U0056 Vehicle Communication Bus D Performance
U0057 Vehicle Communication Bus D (+) Open
U0058 Vehicle Communication Bus D (+) Low
U0059 Vehicle Communication Bus D (+) High
U0060 Vehicle Communication Bus D (-) Open
U0061 Vehicle Communication Bus D (-) Low
U0062 Vehicle Communication Bus D (-) High
U0063 Vehicle Communication Bus D (-) shorted to Bus D (+)
U0064 Vehicle Communication Bus E
U0065 Vehicle Communication Bus E Performance
U0066 Vehicle Communication Bus E (+) Open
U0067 Vehicle Communication Bus E (+) Low
U0068 Vehicle Communication Bus E (+) High
U0069 Vehicle Communication Bus E (-) Open
U0070 Vehicle Communication Bus E (-) Low
U0071 Vehicle Communication Bus E (-) High
U0072 Vehicle Communication Bus E (-) shorted to Bus E (+)
U0073 Control Module Communication Bus Off
U0074 Reserved by Document
U0075 Reserved by Document
U0076 Reserved by Document
U0077 Reserved by Document
U0078 Reserved by Document
U0079 Reserved by Document
U0080 Reserved by Document
U0081 Reserved by Document
U0082 Reserved by Document
U0083 Reserved by Document
U0084 Reserved by Document
U0085 Reserved by Document
U0086 Reserved by Document
U0087 Reserved by Document
U0088 Reserved by Document
U0089 Reserved by Document
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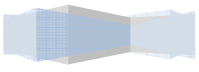
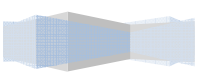


U0098 Reserved by Document
U0099 Reserved by Document

U01XX Network Communications

U0100 Lost Communication with ECM/PCM "A"
U0101 Lost Communication with TCM
U0102 Lost Communication with Transfer Case Control Module
U0103 Lost Communication with Gear Shift Module
U0104 Lost Communication with Cruise Control Module
U0105 Lost Communication with Fuel Injector Control Module
U0106 Lost Communication with Glow Plug Control Module
U0107 Lost Communication with Throttle Actuator Control Module
U0108 Lost Communication with Alternative Fuel Control Module
U0109 Lost Communication with Fuel Pump Control Module
U0110 Lost Communication with Drive Motor Control Module
U0111 Lost Communication with Battery Energy Control Module "A"
U0112 Lost Communication with Battery Energy Control Module "B"
U0113 Lost Communication with Emissions Critical Control Information
U0114 Lost Communication with Four-Wheel Drive Clutch Control Module
U0115 Lost Communication with ECM/PCM "B"
U0116 Reserved by Document
U0117 Reserved by Document
U0118 Reserved by Document
U0119 Reserved by Document
U0120 Reserved by Document
U0121 Lost Communication with Anti-Lock Brake System (ABS) Control Module
U0122 Lost Communication with Vehicle Dynamics Control Module
U0123 Lost Communication with Yaw Rate Sensor Module
U0124 Lost Communication with Lateral Acceleration Sensor Module
U0125 Lost Communication with Multi-axis Acceleration Sensor Module
U0126 Lost Communication with Steering Angle Sensor Module
U0127 Lost Communication with Tire Pressure Monitor Module
U0128 Lost Communication with Park Brake Control Module
U0129 Lost Communication with Brake System Control Module
U0130 Lost Communication with Steering Effort Control Module
U0131 Lost Communication with Power Steering Control Module
U0132 Lost Communication with Ride Level Control Module
U0133 Reserved by Document
U0134 Reserved by Document
U0135 Reserved by Document
U0136 Reserved by Document
U0137 Reserved by Document
U0138 Reserved by Document
U0139 Reserved by Document
U0140 Lost Communication with Body Control Module
U0141 Lost Communication with Body Control Module "A"
U0142 Lost Communication with Body Control Module "B"
U0143 Lost Communication with Body Control Module "C"
U0144 Lost Communication with Body Control Module "D"
U0145 Lost Communication with Body Control Module "E"



U0146 Lost Communication with Gateway "A"
U0147 Lost Communication with Gateway "B"
U0148 Lost Communication with Gateway "C"
U0149 Lost Communication with Gateway "D"
U0150 Lost Communication with Gateway "E"
U0151 Lost Communication with Restraints Control Module
U0152 Lost Communication with Side Restraints Control Module
U0153 Lost Communication with Side Restraints Control Module
U0154 Lost Communication with Restraints Occupant Sensing Control Module
U0155 Lost Communication with Instrument Panel Cluster (IPC) Control Module
U0156 Lost Communication with Information Center "A"
U0157 Lost Communication with Information Center "B"
U0158 Lost Communication with Head Up Display
U0159 Lost Communication with Parking Assist Control Module
U0160 Lost Communication with Audible Alert Control Module
U0161 Lost Communication with Compass Module
U0162 Lost Communication with Navigation Display Module
U0163 Lost Communication with Navigation Control Module
U0164 Lost Communication with HVAC Control Module
U0165 Lost Communication with HVAC Control Module
U0166 Lost Communication with Auxiliary Heater Control Module
U0167 Lost Communication with Vehicle Immobilizer Control Module
U0168 Lost Communication with Vehicle Security Control Module
U0169 Lost Communication with Sunroof Control Module
U0170 Lost Communication with "Restraints System Sensor A"
U0171 Lost Communication with "Restraints System Sensor B"
U0172 Lost Communication with "Restraints System Sensor C"
U0173 Lost Communication with "Restraints System Sensor D"
U0174 Lost Communication with "Restraints System Sensor E"
U0175 Lost Communication with "Restraints System Sensor F"
U0176 Lost Communication with "Restraints System Sensor G"
U0177 Lost Communication with "Restraints System Sensor H"
U0178 Lost Communication with "Restraints System Sensor I"
U0179 Lost Communication with "Restraints System Sensor J"
U0180 Lost Communication with Automatic Lighting Control Module
U0181 Lost Communication with Headlamp Leveling Control Module
U0182 Lost Communication with Lighting Control Module
U0183 Lost Communication with Lighting Control Module
U0184 Lost Communication with Radio
U0185 Lost Communication with Antenna Control Module
U0186 Lost Communication with Audio Amplifier
U0187 Lost Communication with Digital Disc Player/Changer Module "A"
U0188 Lost Communication with Digital Disc Player/Changer Module "B"
U0189 Lost Communication with Digital Disc Player/Changer Module "C"
U0190 Lost Communication with Digital Disc Player/Changer Module "D"
U0191 Lost Communication with Television
U0192 Lost Communication with Personal Computer
U0193 Lost Communication with "Digital Audio Control Module A"
U0194 Lost Communication with "Digital Audio Control Module B"
U0195 Lost Communication with Subscription Entertainment Receiver Module
U0196 Lost Communication with Rear Seat Entertainment Control Module

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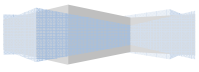

U0197 Lost Communication with Telephone Control Module
U0198 Lost Communication with Telematic Control Module
U0199 Lost Communication with "Door Control Module A"
U0200 Lost Communication with "Door Control Module B"
U0201 Lost Communication with "Door Control Module C"
U0202 Lost Communication with "Door Control Module D"
U0203 Lost Communication with "Door Control Module E"
U0204 Lost Communication with "Door Control Module F"
U0205 Lost Communication with "Door Control Module G"
U0206 Lost Communication with Folding Top Control Module
U0207 Lost Communication with Movable Roof Control Module
U0208 Lost Communication with "Seat Control Module A"
U0209 Lost Communication with "Seat Control Module B"
U0210 Lost Communication with "Seat Control Module C"
U0211 Lost Communication with "Seat Control Module D"
U0212 Lost Communication with Steering Column Control Module
U0213 Lost Communication with Mirror Control Module
U0214 Lost Communication with Remote Function Actuation
U0215 Lost Communication with "Door Switch A"
U0216 Lost Communication with "Door Switch B"
U0217 Lost Communication with "Door Switch C"
U0218 Lost Communication with "Door Switch D"
U0219 Lost Communication with "Door Switch E"
U0220 Lost Communication with "Door Switch F"
U0221 Lost Communication with "Door Switch G"
U0222 Lost Communication with "Door Window Motor A"
U0223 Lost Communication with "Door Window Motor B"
U0224 Lost Communication with "Door Window Motor C"
U0225 Lost Communication with "Door Window Motor D"
U0226 Lost Communication with "Door Window Motor E"
U0227 Lost Communication with "Door Window Motor F"
U0228 Lost Communication with "Door Window Motor G"
U0229 Lost Communication with Heated Steering Wheel Module
U0230 Lost Communication with Rear Gate Module
U0231 Lost Communication with Rain Sensing Module
U0232 Lost Communication with Side Obstacle Detection Control Module
U0233 Lost Communication with Side Obstacle Detection Control Module
U0234 Lost Communication with Convenience Recall Module
U0235 Lost Communication with Cruise Control Front Distance Range Sensor

U030XX Network Software

U0300 Internal Control Module Software Incompatibility
U0301 Software Incompatibility with ECM/PCM
U0302 Software Incompatibility with Transmission Control Module
U0303 Software Incompatibility with Transfer Case Control Module
U0304 Software Incompatibility with Gear Shift Control Module
U0305 Software Incompatibility with Cruise Control Module
U0306 Software Incompatibility with Fuel Injector Control Module
U0307 Software Incompatibility with Glow Plug Control Module

U0308 Software Incompatibility with Throttle Actuator Control Module
U0309 Software Incompatibility with Alternative Fuel Control Module
U0310 Software Incompatibility with Fuel Pump Control Module
U0311 Software Incompatibility with Drive Motor Control Module
U0312 Software Incompatibility with Battery Energy Control Module A
U0313 Software Incompatibility with Battery Energy Control Module B
U0314 Software Incompatibility with Four-Wheel Drive Clutch Control Module
U0315 Software Incompatibility with Anti-Lock Brake System Control Module
U0316 Software Incompatibility with Vehicle Dynamics Control Module
U0317 Software Incompatibility with Park Brake Control Module
U0318 Software Incompatibility with Brake System Control Module
U0319 Software Incompatibility with Steering Effort Control Module
U0320 Software Incompatibility with Power Steering Control Module
U0321 Software Incompatibility with Ride Level Control Module
U0322 Software Incompatibility with Body Control Module
U0323 Software Incompatibility with Instrument Panel Control Module
U0324 Software Incompatibility with HVAC Control Module
U0325 Software Incompatibility with Auxiliary Heater Control Module
U0326 Software Incompatibility with Vehicle Immobilizer Control Module
U0327 Software Incompatibility with Vehicle Security Control Module
U0328 Software Incompatibility with Steering Angle Sensor Module
U0329 Software Incompatibility with Steering Column Control Module
U0330 Software Incompatibility with Tire Pressure Monitor Module
U0331 Software Incompatibility with Body Control Module "A"

U04XX Network Data

U0400 Invalid Data Received
U0401 Invalid Data Received From ECM/PCM
U0402 Invalid Data Received From Transmission Control Module
U0403 Invalid Data Received From Transfer Case Control Module
U0404 Invalid Data Received From Gear Shift Control Module
U0405 Invalid Data Received From Cruise Control Module
U0406 Invalid Data Received From Fuel Injector Control Module
U0407 Invalid Data Received From Glow Plug Control Module
U0408 Invalid Data Received From Throttle Actuator Control Module
U0409 Invalid Data Received From Alternative Fuel Control Module
U0410 Invalid Data Received From Fuel Pump Control Module
U0411 Invalid Data Received From Drive Motor Control Module
U0412 Invalid Data Received From Battery Energy Control Module A
U0413 Invalid Data Received From Battery Energy Control Module B
U0414 Invalid Data Received From Four-Wheel Drive Clutch Control Module
U0415 Invalid Data Received From Anti-Lock Brake System Control Module
U0416 Invalid Data Received From Vehicle Dynamics Control Module
U0417 Invalid Data Received From Park Brake Control Module
U0418 Invalid Data Received From Brake System Control Module
U0419 Invalid Data Received From Steering Effort Control Module
U0420 Invalid Data Received From Power Steering Control Module
U0421 Invalid Data Received From Ride Level Control Module
U0422 Invalid Data Received From Body Control Module

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U0423 Invalid Data Received From Instrument Panel Control Module
U0424 Invalid Data Received From HVAC Control Module
U0425 Invalid Data Received From Auxiliary Heater Control Module
U0426 Invalid Data Received From Vehicle Immobilizer Control Module
U0427 Invalid Data Received From Vehicle Security Control Module
U0428 Invalid Data Received From Steering Angle Sensor Module
U0429 Invalid Data Received From Steering Column Control Module
U0430 Invalid Data Received From Tire Pressure Monitor Module
U0431 Invalid Data Received From Body Control Module "A"

6.2 – Manufacturers Specific DTCs List

For manufacturer specific codes like P1, B1, B2, C1, C2, U1 and U2, check these codes with the 'Code Search' procedure as mentioned in page 33 or it best if refer to the service manuals of the tested vehicle as each individual manufacturer has its own interpretations on the DTCs.

6.3 - Appendix E –What is EOBD, EOBD2 and OBD-II

What is EOBD?

EOBD is an abbreviation of **E**uropean **O**n-**B**oard **D**iagnostics.

All petrol cars sold within Europe since 1 Jan 2001, and diesel cars manufactured from 2003, must have on-board diagnostic systems to monitor engine emissions.

These systems were introduced in line with **European Directive 98/69/EC** to monitor and reduce emissions from cars.

All such cars must also have a standard EOBD diagnostic socket that provides access to this system (as shown below).

The EOBD / ODBII 16-pin diagnostic connector (DLC)

Where is the connector?

The EOBD connector is required by the Directive to be located within the passenger compartment of the car, within reach of the driver's seat. Tools should not be required to reveal the connector, but it may have a removable cover over it.

What does the connector look like?

The connector has the following shape:

Which pins contacts should be present on the connector?

Different pins on the connector are used by different manufacturers. There are 5 pin out combinations within the standard, each of which uses a specific communications protocol. These are listed below:

Protocol	Connector pins used
J1850 VPW	2, 4, 5, and 16, but not 10
ISO 9141-2	4, 5, 7, 15 (see below) and 16
J1850 PWM	2, 4, 5, 10 and 16
KWP2000 (ISO 14230)	4, 5, 7, 15 (see below) and 16
CAN (Controller Area Network)	4, 5, 6, 14 and 16

Note: For ISO/KWP2000 communications, **pin 15** (L-line) is not always required. Pin 15 was used on earlier ISO/KWP2000 cars to "wake-up" the ECU before communication could begin on pin 7 (K-Line). Later cars tend to communicate using only pin 7 (K-Line).

Rover and MG cars: We have noticed that many Rover and MG models do not have pin 5 (Signal Ground). This can prevent some diagnostic tools from 'powering up' where they use pin 5 as the ground for the circuitry.

What are each of the pins used for?

The pins are used as follows:

Pin	Use
2	J1850 Bus+
4	Chassis Ground
5	Signal Ground
6	CAN High (J-2284)
7	ISO 9141-2 K Line and ISO/DIS 14230-4
10	J1850 Bus
14	CAN Low (J-2284)
15	ISO 9141-2 L Line and ISO/DIS 14230-4
16	Battery power (+)

Additional pins may be wired on your car - these may be used by the vehicle Manufacturer for other purposes.

Which protocol is used by each manufacturer?

As a rough guide, the protocols are generally found on cars from the following manufacturers:

Protocol	Manufacturers
J1850 VPW	General Motors, Chrysler…
J1850 PWM	Ford models to 2003 with EEC-V engine management system, this includes: Ford **Cougar** (all UK models), Ford **Puma** (1.6 and 1.7), Ford **Fiesta** Zetec models to 2003, Ford **Mondeo** Zetec models to 2003, Ford **Focus** to 2003 (and some of the newer Ford-based **Jaguars**, e.g. S-Type)…
ISO 9141 & KWP 2000	Most European and Asian manufacturers, e.g. Alfa Romeo, Audi, BMW, Citroen, Fiat, Honda, Hyundai, Jaguar (X300, XK series and X-Type), Jeep, Kia, Land Rover, Mazda, Mercedes, Mitsubishi, Nissan, Peugeot, Renault, Saab, Skoda, Subaru, Toyota, Vauxhall, Volkswagen (VW), Volvo …
CAN	Ford 2004+ Fiesta, Fusion, Mondeo, Focus models Mazda RX-8… Vauxhall Vectra 2003+ model Most new models from approx. 2004 - CAN must be used for EOBD engine diagnostics by all manufacturers by 2008…

Only the latest scan tools and code readers can be relied upon to read the diagnostic information through the EOBD socket.

'Check Engine' light

The 'Check Engine' warning light on the dashboard is often the first sign that the car owner knows about a problem with his car.

This provides very little information to the owner, or to the technician when asked to investigate the problem.

Problem diagnosis

With the modern tools, skilled technicians should be able to diagnose and solve many of the problems, which prior to this, required the sophisticated console tools of main dealers.

New technology

The introduction of European on-board diagnostics standards has opened up new opportunities for car workshops and owners.

A range of low-cost tools are now available to read and clear error codes, to view live/stored readings from sensors within the car, and to switch off the 'Check Engine' light.

What information is available?

EOBD systems monitor and store information from sensors throughout the car, e.g. air flow sensors, oxygen sensors, etc.

Sensor values outside an acceptable range will trigger a Diagnostic Trouble Code (DTC). The Scan tools can display and interpret these codes. Some Scan Tools will also provide 'Live Data' of the sensors output.

EOBD or OBD II ?

On-Board Diagnostics, or OBD, was the name given to the early emission control and engine-management systems introduced in cars. There is no single OBD standard and each manufacturer, often using quite different systems (even between individual car models).

OBD systems have been developed and enhanced, in line with United States government requirements, into the current OBD II standard.

The OBD II Federal requirements apply to cars sold in the United States from 1996.

EOBD is the European equivalent of the American OBD II standard, which applies to petrol cars sold in Europe from 2001 (and for diesel cars 3 years later).

Why do OBDII and EOBD tools not work on all cars from 1996 in the UK and Europe?

Some of our most frequently asked questions on our OBDII and EOBD tools are:

"I have seen these/similar products advertised as working on all 1996 and newer cars - why don't yours?"

"I've just bought an OBDII/EOBD tool from someone else that was advertised as working with all 1996 and newer cars.
Why doesn't it work on my [1999 Vauxhall Vectra]?"

Here is the answer...

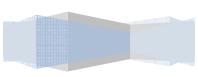
In 1996 in the United States, a Federal Law came into force requiring **all US-sold cars** to be OBDII compliant. Most OBDII tools are therefore advertised as working with all cars from 1996.

The OBDII Federal Law applied **only to cars sold in the US**.

In the UK and the rest of Europe, the equivalent law (European On-Board Diagnostics, or EOBD) did not come into force, and more importantly, was not fully implemented by our car manufacturers, until 2001 for petrol cars (2003/4 for diesels).

Where an OBDII tool is sold in the UK/Europe claiming to work on all cars from 1996, this is highly **unlikely to be the case**.

Even where a seemingly identical car may have been sold in Europe and the US before 2001, from our own testing and research, it is rarely the case that the European model will be OBDII/EOBD compliant.



The fact that we sell these tools as only working with 2001 and newer petrol (and similarly 2003/4 diesels) is due to the fact that we are being

honest in the coverage, rather than simply duplicating the sales information from the US.

So do these tools work with any UK/European cars before 2001?

Yes they do, but certainly not across the board, and very rarely back as far as 1996. A few manufacturers that we know have some OBDII/EOBD support (on petrol models) before 2001 are listed below:

Ford (most petrol cars using the EEC-V engine management system)
Jaguar (most models from the beginning of the X300 series)
Volvo (some models)

A few examples of manufacturers that we have had very little success connecting OBDII/EOBD tools on pre-2001 models are:

Vauxhall
Peugeot
Citroen
Fiat

Please be aware that we do not try to sell these tools as something they are not.

What is EOBD2?

EOBD2 is **not** a new version of EOBD.

Where EOBD stands for 'European On-Board Diagnostics', EOBD2 actually stands for 'Enhanced On-Board Diagnostics, Second Generation'.

EOBD2 tends to refer to manufacturer-specific features available on some OBDII/EOBD tools to access additional parameters/information from a car, over and above the normal parameters and information available within the EOBD/OBDII standard.

EOBD2 features are normally highly manufacturer-specific, and will usually only be available for a certain car manufacturer, e.g. Ford.

There are, as such, no 'EOBD2 cars', i.e. cars that require an EOBD2 tool to access their diagnostics information. EOBD2 functionality might however allow more information to be extracted from an EOBD/OBDII compliant car.

7.0 - Disclaimer

All information, illustrations, and specifications contained in this user manual are based on the latest information available at the time of printing. The right is reserved to make any changes at any time without obligation to notify any person or organization of such revisions or changes.

Furthermore, the manufacturer or its sales agents are not liable for errors contained herein or for incidental or consequential damages (including lost profits) in connection with the furnishing, performance or use of this material.

This user manual tells how to use and perform the required procedures on vehicles. Safe and effective use of this Scan tool is very much dependant on the user following the normal practices and procedures outline in this manual.

8.0 - Warranty Information

8.1 – Limited Warranty

This limited warranty cover defects in materials and workmanship for a period of twelve (12) months which begins from the date the product is purchased by the end user and is subjected to the following terms and conditions:

1. Within the warranty period, the manufacturer will repair or replace, at their options, any defective parts and return to the owner in good working condition.

2. Any repaired or replaced parts will be warranted for the balance of the original warranty or three months (3) months from the date of repair, whichever is longer.

3. This warranty only extends to the first owner and not assignable or transferable to any subsequent owner.

4. Cost of delivery charges incurred for the repair of the product to and from the manufacturer will be borne by the owner.

5. This limited warranty covers only those defects that arises as a result of normal use and does not cover those that arises as a result of:

   - Unauthorized modifications and repair.
   - Improper operation or misuse.
   - Accident or neglect such as dropping the unit onto hard surfaces.
   - Contact with water, rain or extreme humidity.
   - Contact with extreme heat.
   - Cables that have broken, bent contact pins or subject to extreme stress or wear.
   - Physical damage to the product surface including scratches, cracks or other damage to the display screen or other externally exposed parts.

8.2 - Limitations of Warranty

Other than the foregoing limited warranty, the manufacturer does not make any other warranty or condition of any kind, whether express or implied.

Any implied warranty of merchantability, or fitness for use shall be limited to the duration of the foregoing limited warranty.

Otherwise, the foregoing limited warranty is the owner's sole and exclusive remedy and is in lieu of all other warranties whether express or implied.

The manufacturer or any of its exclusive sales agents shall not be liable for any consequential or incidental damages or losses arising of the loss of uses of this product.

All warranty information, product features and specifications are subjected to change without prior notice.